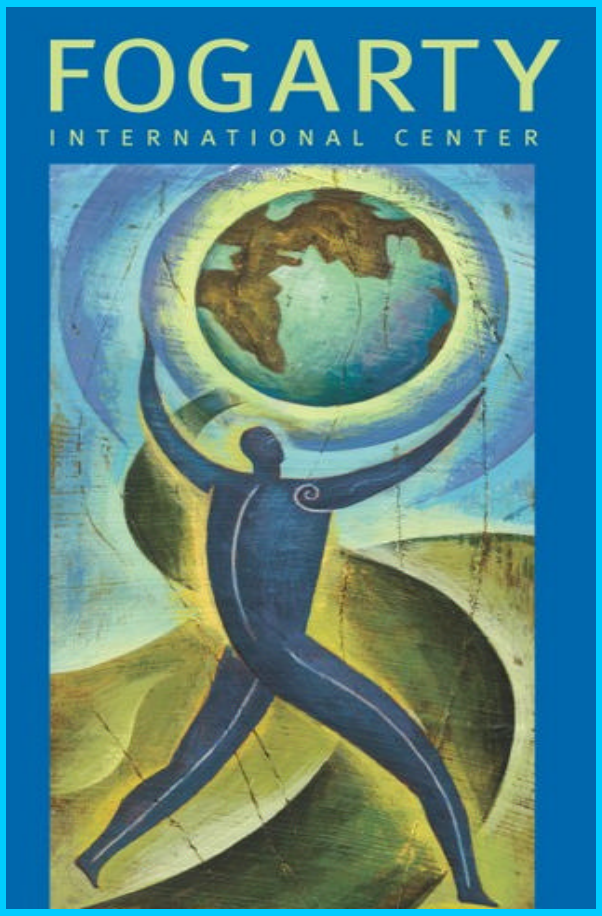
REVIEW OF THE INTERNATIONAL TRAINING AND RESEARCH PROGRAM IN POPULATION AND HEALTH (ITRPH)



FINAL REPORT

May 17th- 19th, 2004
Fogarty International Center
National Institutes of Health
Bethesda, Maryland

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July 27, 2004

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Dear Dr. Hrynkow,

I enclose the final report of the panel convened to review the International Training and Research Program in Population and Health (ITPRH) in May of this year. The report reflects the findings and recommendations made by the review panel, which I chaired. I hope that the report will be helpful to FIC and its partners as they fashion the next request for applications (RFA) this fall, and consider changes to strengthen the program.

During our three-day review meeting at NIH, we received overwhelmingly positive comments on ITPRH from the many FIC partners and program participants whom we interviewed. We also received interesting suggestions as to how the program might be strengthened in the future. We hope that FIC and its partners will be able to give these suggestions serious consideration during their forthcoming deliberations.

As you will see from the report, the review panel was impressed by the accomplishments of the ITPRH and by its very important role in building research capacity in population and health in developing countries. I have no doubt that the program has even greater accomplishments ahead of it, especially if FIC and its partners are able to build on some of the very useful suggestions that surfaced during the review.

On a personal note, I should add that I thoroughly enjoyed chairing the ITRPH review panel and working with the other panel members. The Fogarty Framework for Evaluation, which was used in the review, was a novel and effective way to assess a complex program in a short period of time. I would also like to thank Linda Kupfer of

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July 27, 2004
Page 2

FIC and the Abt staff members, Alexis Wilson and Brian Zuckerman, who were a pleasure to work with and remarkably effective in keeping the panel on track and in turning our notes into a clear and concise draft for our review.

With best wishes,

Yours sincerely,

Carolyn Makinson

Table of Contents

Letter of Transmittal……..2

Executive Summary 5

I. Background on the International Training and Research Program in Population and Health (ITRPH)..... 9

II. Achieving Program Goals 12

III. Substantive focus of ITRPH 14

IV. ITRPH Administration, Partnerships, and Program Evaluation..... 18

V. PI-level Management: Trainee Selection, Type of Training, Role of ICCs..... 24

VI. Institutional Capacity Building 26

VII. Post-training Return and Re-entry issues..... 30

VIII. Conclusion 34

Appendix A – All Global and Individual Section Recommendations 35

Appendix B – Letter to the Chair of the ITRPH Review Panel..... 38

Appendix C – ITRPH Review Panelists 39

Appendix D – FIC Evaluation Framework 41

Appendix E – ITRPH Interviewees 55

Appendix F – Long-term Trainee Country of Origin by Program..... 56

Appendix G – ITRPH RFA Travel Guidelines 57

Appendix H – List of ITRPH Publications by Year 58

Executive Summary

Established in 1995, the Fogarty International Center's (FIC) International Training and Research Program in Population and Health (ITRPH) has been training scientists from around the world in the fields of reproductive biology and population studies for the past decade. FIC conducts qualitative peer-reviews of its programs every five years and more extensive quantitative evaluations every ten to fifteen years. In May 2004, an Expert Panel of five scientists gathered to review the program's progress with an eye toward the new Request for Applications (RFA). This review served as the first formal evaluation of the ITRPH.

With the program goals in mind, the Panel conducted interviews with program stakeholders in the United States and abroad. The Panel received input from program trainees, Principal Investigators (PIs), in-country collaborators (ICCs), FIC program officers, other National Institute of Health (NIH) partners, and an outside population studies expert. In these interviews, the Panelists explored the appropriateness and realization of program goals and management, funding opportunities and reporting mechanisms, and scientific areas covered.

The reviewers agreed that the program had successfully accomplished a great deal during its first ten years:

- A total of 161 long-term trainees (39 doctoral, 68 postdoctoral, 22 sabbatical, and 32 other degrees) and 336 short-term trainees from 31 countries have been trained.

- A total of 9,408 participants have attended 142 workshops.

- 86 long-term trainees have completed their training; 66% have returned to their country of origin.

- Former trainees in their home countries and in the U.S. are securing professorships, research positions, and other upper-level management and research positions.

- Several of the former trainees interviewed are themselves providing training in their country and some have become in-country collaborators (ICCs) under the program.

- 13 of the former trainees (15%) and two current trainees have been awarded other NIH grants (e.g., R01, R03, U01, K01).

- Trainees published a total of 336 publications in international peer-reviewed journals such as *Science*, *Journal of Biological Chemistry*, and *Pediatrics*.

- The program appears well on its way to building institutional as well as individual research capacity in some of the countries in which it is currently operating.

While the Panelists clearly observed that the program is progressing successfully, they raised several issues to consider that potentially could make the program stronger. These suggestions can be generally grouped into five recommendations. Further recommendations and more complete explanations are contained in the body of the report and are listed in Appendix A.

Global Recommendation 1: FIC should broaden the geographic and topical scope of ITRPH research. This expansion may facilitate new collaborations, while strategically soliciting additional funding support from partners both within and outside of NIH.

Within population studies, the program focus should be expanded to emphasize the fields of aging and adult health, and to add the areas of population and environment, nutrition, and migration. In reproductive biology, however, geographic diversity should be extended beyond the current focus on Latin America, India, and China.

Broadening the program scope may facilitate the formation of other partnerships based on mutual interests. Additional, non-NIH partnerships and collaborations should be explored.

Global Recommendation 2: Administratively, FIC should: establish a better set of evaluative criteria to measure and report on local capacity building, including some type of long-term trainee-tracking system; involve foreign scientists in the proposal review process; and strengthen communication and reporting to NIH partners.

The data collected by the program grantees is based on the traditional metrics described on the previous page. Additional qualitative and quantitative metrics should be considered to better evaluate the extent of research capacity development in foreign countries. Several alternative quantitative metrics suggested include: post-training funding applications and acceptances, patents filed and awarded, technologies licensed, and non-technical reports and briefs. To better collect information to trace contributions made by trainees after program completion, FIC should develop a long-term trainee-tracking system. The annual progress reports should be revised to focus more on long-term trainee "success" stories and trainee trajectories, rather than attempting to account for every single long-term and short-term trainee.

The Panel recommends that scientists from developing countries should be included in the proposal review process to ensure that international needs are considered.

Relationships with NIH partner agencies should be strengthened. One avenue to improve communication is to provide 1–2 page annual reports highlighting important program

data and successes. Many partners indicated that although they support the program and are pleased with its progress, they are not kept current on program activities.

Global Recommendation 3: FIC should revise the trainee selection process with a more formal role for the ICCs and a focus on transparency. To achieve this, the ICC role should be formalized to include salary and research incentives.

Though individual program Principal Investigators are careful about trainee selection, the Panel believes that the selection process needs to be revised with an effort towards increasing transparency. Currently most PIs rely heavily on the recommendations of their ICCs. While this is an effective method to attract talented candidates, it may inadvertently limit the applicant pool to individuals from the ICCs' home institutions.

By formalizing the role of ICCs (e.g., giving them a salary and specific responsibilities), trainee recruiting could be part of the job description and a wider selection of candidates could be attracted. The job description of the ICC could also include other responsibilities (e.g., mentoring the trainee and serving as a liaison with important health administrators, government officials, policy-makers and other non-government organizations in the country).

Global Recommendation 4: FIC should expand its goal of creating "Centers of Excellence" to include "research networks" in countries without strong central research institutions. FIC should also consider establishing a committee to discuss the benefit of a "Fogarty Institute for Advanced Studies."

One of the current ITRPH program goals is to build "Centers of Excellence." Institutions sending multiple long-term trainees who then return to their home countries, are re-integrated, and continue to collaborate with U.S. PIs, are likely candidates as current or future "Centers." The Panelists agree that in countries where a strong central research center is not available (e.g., Sub-Saharan Africa), it may be more appropriate to encourage research networks. Informal research networks between trainees and mentors in-country consist of both short-term and long-term ITRPH trainees; finding a way to support and formalize these networks (e.g., hold annual trainee meetings, have a trainee list-serve), could be very important to the program and to the returning trainees.

Additionally, the Panelists suggest that FIC should consider creating a "Fogarty Institute for Advanced Studies." An institute such as this would provide an opportunity for all FIC scholars (not exclusively ITRPH trainees) to have short- to medium-term "mini sabbaticals" to work on grant proposals and papers. Such an institute could also help establish and strengthen the network of collaborative relations among FIC trainees.

Global Recommendation 5: FIC should further emphasize the importance of trainee return by employing both positive and negative incentives. FIC should provide more extensive support for returning trainees to facilitate reintegration.

In order for the program to achieve its goal of international capacity building, it is essential that trainees return to their home countries upon program completion. While approximately two-thirds of all graduated long-term trainees have returned to their home countries, the numbers still can be higher. Many trainees face difficulty returning and reintegrating into the research culture of their home countries. Once they leave the U.S., they no longer have access to state-of-the-art equipment, are not surrounded by colleagues familiar with their new knowledge, and have great difficulty securing funding to support their research. Consequently, obtaining employment in the U.S. is more desirable than returning home.

To address this issue, PIs should be encouraged to employ a variety of positive incentives (e.g., re-entry grants, mini-sabbaticals for returned trainees) and negative incentives (e.g., requiring PIs to more carefully select candidates to ensure return, withholding assistance needed to help trainees remain in the U.S.) to promote trainee return and facilitate re-entry into foreign research institutions. At annual meetings, ITRPH and PIs should share the strategies they use to encourage trainees to return home.

I. Background on the International Training and Research Program in Population and Health (ITRPH)

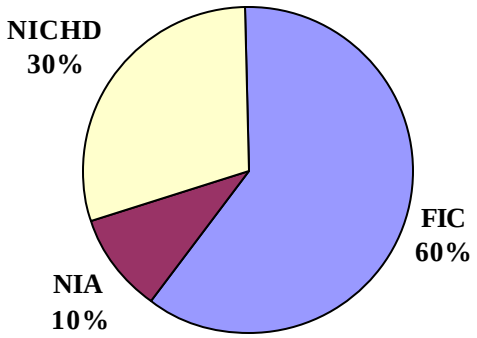
A. Background

The developing world has great need for biological, behavioral, and demographic research to address issues of population growth, health, and stability. Issues that affect developing countries today include: rapid population growth that continues despite marked declines in fertility in almost all regions; age-specific mortality rates that, despite extraordinary decreases over the past 50 years, remain much higher than in developed countries; health problems that contribute to higher mortality, with some sources of morbidity being unique to developing counties (e.g., malaria) and other sources having a greater impact on developing countries due both to higher prevalence and to weaker health services infrastructure (e.g., HIV/AIDS); problems presented by changing age structures–whether rapid increases in the elderly population as seems likely in China and countries of Southeast Asia, or very large cohorts of young people seeking entry into the labor force as is typical of the countries of North Africa and the Middle East; and the growing movements of population around the globe, through international migration, internal migration, and urbanization. Research in reproductive biology and population studies may help to address a variety of these pressing problems facing developing countries.

The Fogarty International Center, in collaboration with the National Institute of Child Health and Human Development (NICHD) and the National Institute on Aging (NIA), is building capacity to conduct population and health research in the developing world through the International Training and Research Program in Population and Health (ITRPH). Initiated in 1995, the ITRPH program supports universities and non-profit research institutions in the United States that provide training to scientists from developing countries in a discipline related to population studies or reproductive biology. Institutional training grants are awarded through the program every five years; applications are accepted from U.S. institutions that are current NIH grant recipients. Currently, there are nine ITRPH grantees located in seven U.S. universities (seven from the initial round of competition and two additional grantees added in 2000). Grantees receive approximately $200,000 on average per year, with 60% of the funding coming from FIC and 40% from NIH partners (Figure 1).

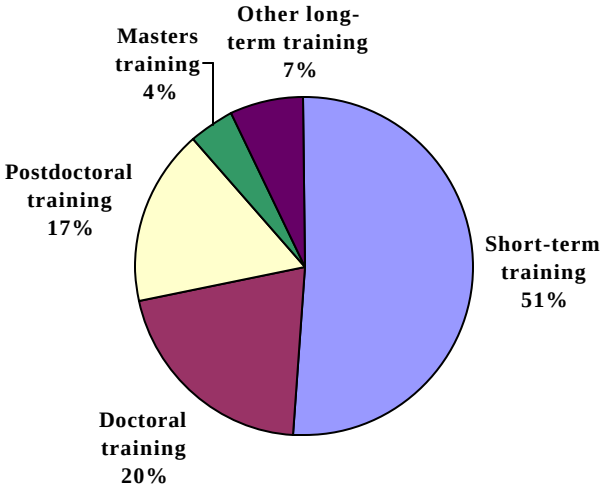
Trainees involved in the ITRPH program come from diverse backgrounds, both geographically and academically. Current trainees hail from thirty-one countries in every region of the developing world. Pre-training educational levels of trainees range from bachelors to post-doctoral trainees; they receive both degree (e.g., Masters, doctoral) and non-degree (e.g., postdoctoral, sabbatical, short-term) training through ITRPH. The 157 trainees in the program in 2002-2003 (the most recent year for which data are available) include 80 receiving short-term training (<6 months training), 32 doctoral students, 27 postdoctoral students, 7 masters students and 11 receiving other long-term training (Figure 2).

Figure 1: Distribution of ITRPH funding in 2003 (Total = $2,193,773)



Source: Review panel analysis of ITRPH data

Figure 2: Training type for 2002-2003 ITRPH participants



Source: Review Panel analysis of ITRPH data

B. Program Mission

As stated in the 2000 RFA, the ITRPH program goals are threefold:

1. To enhance international and U.S. population research programs through training of foreign nationals and international collaborative studies related to populations, including the study of: a) reproductive processes (including biology, immunology, genetics), contraceptive development, contraceptive and reproductive health evaluation, reproductive epidemiology; and b) demographic processes, including: aging, longevity, biodemography, mortality, morbidity, fertility, migration, linkages between health and economic development, and other social, behavioral and economic factors that influence population dynamics.

2. To strengthen the ability of scientists from developing nations to contribute to global population research efforts and advance knowledge in support of population policies appropriate for their home countries and established international guidelines.

3. To develop and strengthen centers of research excellence in population-related sciences in developing countries through training and training-related research.

C. ITPRH Review Process

From May 17th to 19th, 2004, a group of five experts in the areas of population studies and reproductive biology gathered at the Fogarty International Center at the NIH in Bethesda, MD to assess the achievements and value of the International Training and Research Program in Population and Health over the last ten years (the letter to the ITRPH Review Panel is found in Appendix B and biographical sketches of the Panelists are included in Appendix C). The review was conducted following the FIC Framework for Evaluation (shown in Appendix D). The five panelists conducted in-person interviews and conference calls with all of the key program stakeholders: Principal Investigators, trainees, NIH partners and Program Officers, in-country collaborators, as well as an outside population studies expert familiar with the ITRPH program (interviewees listed in Appendix E).

II. Achieving Program Goals

After speaking with key stakeholders involved with the ITRPH, the achievements and the value of this program were manifest. In the first ten years of existence, the program has been effective in advancing all three goals:

GOAL 1: Enhance international and U.S. population research programs through training of foreign nationals and international collaborative studies related to populations.

- An enthusiastic, talented, and committed group of Principal Investigators (PIs) has been selected to participate in the ITRPH program.
- The ITRPH is enriching research diversity in U.S. institutions.
- The five-year funding mechanism allows the PIs to take a long-term view of international capacity building.
- 86 long-term trainees have already completed training (17 doctoral students, 39 postdoctoral students, 20 sabbatical students, three masters students and seven other long-term training students), and an additional 75 are currently in training.
- A total of 9,408 participants have attended 142 workshops.

GOAL 2: Strengthen ability of scientists from developing nations to contribute to global population research efforts and advance knowledge in support of population policies appropriate for their home countries and established international guidelines.

- Trainees are returning to their home countries (66% have returned over the past decade), providing the potential for "trickle down" learning opportunities in their home institutions.
- The ITRPH is establishing a cadre of well-trained international research collaborators as well as providing a unique training opportunity for foreign scientists.
- Trainees have published 336 publications in international peer-reviewed journals.
- Thirteen former trainees and two current trainees have successfully competed for and been awarded NIH grants.

GOAL 3: Develop and strengthen centers of research excellence in population-related sciences in developing countries through training and training related research.

- For the most part, there is a concentration on a limited number of countries and institutions that promote foreign institutional capacity building and create the potential for establishing "centers of excellence."

Beginning in the 1950s, the population studies field received support from a large number of major U.S. foundations. In recent years, this number has dwindled. In particular, the three foundations that provided large-scale support for academic training of developing country scholars (Mellon, Hewlett, Rockefeller) have all ended or substantially revised their programs in response to shifting Foundation emphases. ITRPH is therefore filling a critical niche.

All stakeholders (PIs, trainees, ICCs, NIH partners, and an outside expert) have a strong, positive view of the ITRPH. Trainees involved in the program have expressed gratitude and satisfaction with their training experiences:

> "I think there will be an increased public health cooperation between Uganda and the U.S. as more people from Uganda are trained under the ITRPH program. I also think that my training will lead to improved health practices in Uganda." – former trainee, Uganda

> "The experience at the ITRPH gave me the confidence to be an independent researcher." – former trainee, Mexico

> "ITRPH is doing a very good job in helping young scientists in developing countries" – current trainee, Argentina

> "I believe that ITRPH has an important role in building research capacity in Latin American research centers devoted to population studies. In Brazil, agencies related to research have been through a series of challenges recently. The government has reduced considerably the number of fellowships for studies abroad. This really limits the possibility of having international exposure. Therefore, programs such as ITRPH are of great relevance." – current trainee, Brazil

III. Substantive focus of ITRPH

A. Areas of Research

Currently there are nine grantees at seven U.S. institutions participating in the ITRPH program (Table 1). Areas of research are divided evenly between the fields of reproductive biology and population studies. There are four PIs who focus on reproductive biology, four who concentrate on population studies, and one PI whose program spans both fields.

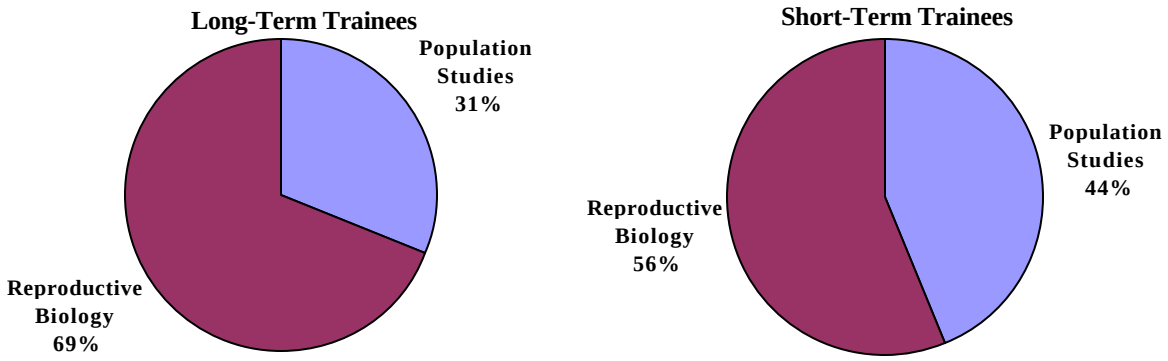
Table 1: Total number of long- and short-term trainees (1995-2004) by institution

Cohort	Program code and research focus	Long-term	Short-term
Cohort 1 – Funded since September 30, 1995	Program #1, Reproductive Biology	36	39
	Program #2, Reproductive Biology	20	86
	Program #3, Reproductive Biology	16	28
	Program #4, Reproductive Biology	20	36
	Program #5, Population studies	4	28
	Program #6, Population Studies	16	78
	Program #7, Population Studies	30	27
Cohort 2 – Funded since September 30, 2000	Program #8, Reproductive Biology and Population Studies	14	13
	Program #9, Population Studies	5	1
	TOTAL	**161**	**336**

Note: Long-term trainees generally undergo at least 6 months of training, with the average long-term trainee completing 1.7 years in the program. The definition of a short-term trainee is broader, varying from participation in day-long to several month-long training programs, predominantly in the U.S.
Source: Review Panel analysis of ITRPH data

Within the broad categories of reproductive biology and population studies, there are 31 specialties in which trainees are trained. Male and female reproductive biology, cellular and molecular biology, economic and environmental demography, nutrition and sociology, and family health are among the most common specialties. Overall, there are more long-term and short-term trainees that have been, or are being trained in reproductive biology than in population studies (Figure 3).

Figure 3: Research areas of long-term (n=161) and short-term (n=336) trainees



Source: Review Panel analysis of ITRPH data

Panelists identified potential considerations for both the reproductive biology and population studies portions of the program. Three of the four reproductive biologists are primarily focused on basic research, while only one program incorporates both basic and applied research. All population studies PIs also appear to have a clear focus on translational research and on affecting change in foreign countries consistent with the second goal of ITRPH.

> ***Recommendation: For the reproductive biology portfolio, FIC should consider a balance among basic research, applied research, clinical research, and product development in its overall portfolio of research.***

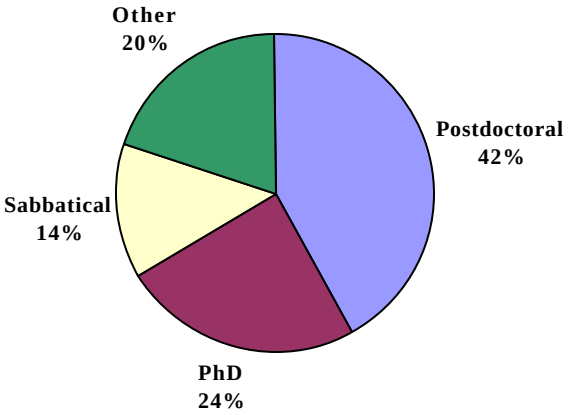
At the same time, panelists identified several social science areas with population-health linkages that are not research priorities of current ITRPH grantees. These areas include: aging and adult health, population and environment, nutrition, and migration.

> ***Recommendation: The focus of the next RFA should be broadened in population studies to emphasize aging and adult health, HIV/AIDS, population and environment, nutrition, and migration (though linkages to other programs should be considered when overlap exists).***

The type of training conferred varies among programs; but in general, most long-term trainees (≥6 months of training) are receiving postdoctoral (42%), Doctoral (24%), or sabbatical (14%) training (Figure 4). One program focuses specifically on postdoctoral and sabbatical training, while the other programs additionally accept a mix of doctoral and non-degree students. Most PIs agree that the type of training depends on the needs of the countries from which they recruit students.

> ***Recommendation: The current flexibility regarding the types of ITRPH training available is beneficial. It is recommended that the program maintain this flexibility.***

Figure 4: Type of training provided to long-term trainees (n=161)



Note: The "other" category includes pre-doctoral, other graduate-level, and non-degree training.

Source: Review Panel analysis of ITRPH data

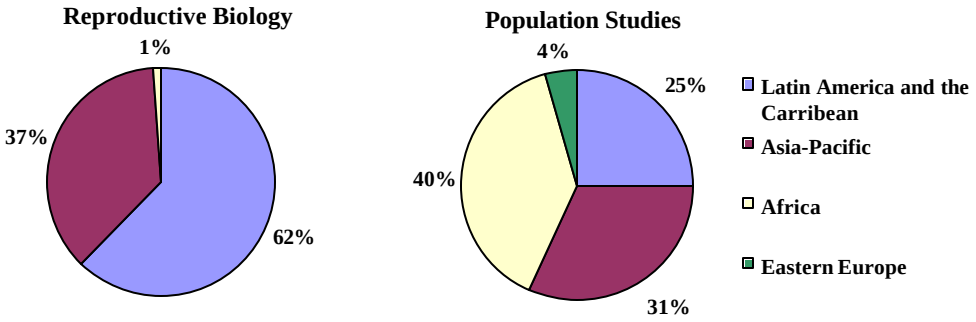
B. Geographic Distribution

Most trainees in reproductive biology programs come from Latin America, India and China, while the population studies programs draw trainees widely from institutions in Latin America, South Asia, and sub-Saharan Africa (Figure 5) (for more complete details see Appendix F). Overall, most long-term trainees come from six countries where the ITRPH is most intensely active (Table 2). [1] Additionally, some programs have established collaborations with multiple centers/institutions, while others are more focused on one or two institutions. A number of PIs indicated that they would consider adding new sites or countries to their programs; however, they still agree that there is more capacity building needed in the current focus countries. Hence, new sites should not be added at the expense of existing collaborations.

> ***Recommendation: Geographic diversity should be broadened in reproductive biology programs beyond the current focus on Latin America, India, and China. Current collaborations, however, should also be maintained.***

[1] During panel deliberations and interviews, issues of gender (e.g., gender equity, relative post-training success of male and female trainees) did not arise. One potential reason for the absence of discussion of this issue lies in ITRPH's success in attracting a gender-balanced group of trainees. Over the ten years of training, 41.6% of long-term trainees have been female, and the percentage has remained steady over time. While there are slight variations in gender balance depending on type of training and trainee origin (e.g., a slightly higher percentage of Master's and PhD students are female than are postdoctoral and sabbatical trainees, and trainees from Central and South America are more likely to be female than are trainees from Africa and Asia), these differences are not statistically significant.

Figure 5: Region of Origin for ITRPH long-term trainees (n=161)



Source: Review Panel analysis of ITRPH data

Table 2: Most common countries of origin and number of grant programs represented in that country (n=9)

Country	Number of Long-term Trainees	Number of grant programs involved in research and training
Mexico	30	4
India	25	2
Argentina	22	3
China	21	4
Chile	12	3
Uganda	11	2
Subtotal:	**121**	

Note: The other 40 long-term trainees come from 25 countries. There are 16 countries where research and training efforts are active that have not had any long-term trainees involved in the program.
Source: Review Panel analysis of ITRPH data

The findings of this section lead to Global Recommendation 1:

"FIC should broaden the geographic and topical scope of ITRPH research. This expansion may facilitate new collaborations, while strategically soliciting additional funding support from partners both within and outside of NIH."

IV. ITRPH Administration, Partnerships, and Program Evaluation

A. Grantee Selection and Review Process

Initially in 1995 and again in 2000, PIs and programs were selected through NIH's peer-review process. A review committee comprised of biological and population scientists received, reviewed, and selected grantees for the present program.

Three issues emerged regarding the effect of the review process on the program's balance. First a concern was raised regarding the review of biological proposals, specifically whether the panelists sufficiently weighed the goal to "advance knowledge in support of population policies appropriate for their home countries" in their deliberations. Second, input from pharmaceutical scientists also might be helpful to provide a more practical viewpoint on the selection and direction of the research projects chosen by trainees and mentors in the reproductive biology area. A third issue identified was that typical NIH review panels tend to draw from U.S.-based scientists with varying levels of knowledge regarding population and health priorities of developing countries.

> ***Recommendation: At least one, and preferably two scientific representatives from developing countries (one population scientist and one biomedical scientist) should be added to the review panel for the next review of applications.***

B. Program Officers

Since its inception in 1995, the ITRPH has had four different FIC program officers. This lack of continuity is largely attributed to the rapid expansion of the Fogarty International Center (FIC). This constant turnover may have hindered relationship building with other NIH agencies.

> ***Recommendation: It is recommended that FIC strive to maintain administrative stability.***

C. Administrative Burden

While the ITRPH program promotes international collaboration and interaction, several grantees mentioned the administrative burden imposed by grant activities (specifically international travel arrangements).

There exists a perverse incentive to support long-term candidates (which may not be the best way to meet current FIC goals) because of administrative burden. Bringing an international trainee to the U.S. requires: making international travel arrangements, applying for visas, and making housing arrangements. This administrative effort required is a "fixed cost," roughly equal for long-term and short-term trainees. Effort per unit of time spent in training, therefore, is much lower for long-term trainees. For programs

concentrating on short-term training, the administrative burden of supporting trainees becomes substantial. Several grantees indicated that they would benefit from more flexibility in the allocation of funds for these administrative tasks.

Upon examination of the last RFA, there is specific mention of funds for travel (Appendix G). While the RFA allows travel costs to be covered, perhaps more specificity should be conferred as to the extent of total funds that may be used for administrative costs.

> ***Recommendation: It is recommended that FIC consider whether certain types of activities or program models (e.g., heavy reliance on short-term training) lead to higher administrative burdens and if necessary, introduce additional flexibility in allocating funds to direct administrative subsidies.***

D. Involvement of NIH Partners

Overall, other NIH Institutes are happy with the ITRPH program, its mission, and progress to date. They tend to be accepting the success of the program, however, on "faith," or "face value." Several partners mentioned that they did not receive progress reports or information in a format that enabled them to easily understand the results of the program. After speaking with representative NIH partners, it became apparent that increased communication between FIC, NIA, and NICHD is needed. As one NIH partner stated, "I am very happy with this program, though I really have no idea what we have gotten out of it."

Based on these discussions, the panel recommends that FIC develop tailored approaches to inform other NIH agencies of the ITRPH achievements and progress. Many NIH partners indicated that it would be helpful to receive a one or two-page summary sheet in addition to the annual progress reports. This sheet would briefly highlight program successes, as well as general information about who is being supported, what they have achieved, where they are going after training completion, what areas are being studied, and what progress has been made in the areas of reproductive health and population studies. In addition to consistent reporting of program data and updates, more face-to-face time between NIH partners and FIC representatives is needed.

> ***Recommendation: Communication with NIH partner agencies should be improved, perhaps through tailored approaches of informing partners (1-2 page summary of progress reports) and a greater emphasis on face-to-face meetings.***

E. Potential Future Collaborations and Partnerships

While the ITRPH program is adequately supported at NIH, the panel recommends that other potential collaborations should be explored. Because so many other agencies look to NIH for advice on scientific research and training, FIC's convening power could be used to bring together other organizations with common missions. FIC should consider forming relationships with other governmental and non-governmental organizations

including: the European Union (EU), the Department for International Development (DFID), The French Institute of Health and Medical Research (INSERM), the Medical Research Councils (MRCs), the World Bank, Wellcome Trust, and the Hewlett and Gates Foundations. Even if these institutions do not co-fund the ITRPH program, they might develop some type of parallel grant-making activity that could support in-country research of former-trainees who have returned to their home countries.

Recommendation: It is recommended that FIC consider new, non-NIH relationships with complementary programs to work with ITRPH.

F. Interdisciplinary Integration

The focus of ITRPH is split between reproductive biology and population studies. While these fields share a strong relevance to developing country problems, there is almost no overlap in the substantive areas of research pursued by the Principal Investigators (PIs). Essentially ITRPH is meshing two disparate programs; when at the annual ITRPH meetings, there is no common mission to discuss. As one PI stated, "the annual meetings are sometimes helpful, but they are also really mixing apples and oranges when they bring together the reproductive biology and population studies people."

While there was some discussion as how to better merge the interests of the two fields, the panelists concluded that FIC should not emphasize such integration. In the past, other programs have wasted efforts in unsuccessful attempts to achieve integration between unlike fields (e.g., the Mellon Foundation in its early attempts to bridge the fields of reproductive biology and population studies).

> ***Recommendation: FIC should not try to force interdisciplinary integration between the reproductive biology and population studies fields. Further, FIC should consider integration of ITRPH with other FIC programs, such as the AIDS International Training and Research Program (AITRP) and the International Maternal and Child Health Research and Training Program (IMCHRT), as their goals warrant. Holding joint network meetings may be one way to provide some integration of the programs.***

Though the fundamental research interests of reproductive biology and population studies are dissimilar, common ground still exists between the two areas. Under the guiding objectives of ITRPH, both programs are striving to strengthen research capacity in developing countries. At the annual meetings, therefore, focus should be placed on common programs, problems, and best practices such as English language development for scientists, international capacity building approaches, or post-program trainee return and reintegration issues. By discussing common areas of interest, inter-program relationships may be strengthened.

Recommendation: If the program remains as it is currently configured, combined annual meetings should focus on non-scientific issues (e.g., English language training and re-entry issues) as a means of uniting the reproductive biology and population studies programs.

G. Evaluation and Monitoring

Traditionally, FIC has assessed program success based on traditional metrics: the number of peer-reviewed publications, conference participation, number of workshops held, and number of other patents and resulting products. All programs are publishing their results in internationally recognized, peer-reviewed journals (Full list of publications can be found in Appendix H). However, if one of the fundamental goals of ITRPH is to promote international capacity building, the simple metrics of publication and conference counts fall short (Table 3). As one of the PIs mentioned, "one must question the morality of research that goes nowhere and ends often only with a publication." Trainees and PIs alike expressed the need to evaluate the program through non-traditional, "translational" metrics. In other words, is the program actually having an impact in developing countries? As one former trainee stated, "the ITRPH focus has been entirely on publications … but trainees have different ranks and different needs. Only about half of the trainees really meet the requirements to be published in an international refereed journal. They still want to disseminate their results to their countries, but this is not always how it is achieved."

Table 3: Total number of publications and presentations by each program

Cohort	Program #	Count of Publications	Count of Presentations
Cohort 1	#1	39	36
	#2	86	47
	#3	28	32
	#4	36	34
	#5	28	33
	#6	78	87
	#7	27	50
Cohort 2	#8	13	12
	#9	1	2

Note: Publication count includes only those published in peer-review journals, and excludes those submitted, in review, and accepted.
Source: Review Panel analysis of ITRPH data

There is an urgent need for FIC to work with grantees to devise more feasible, meaningful, and translational ways of measuring and documenting the realized impact of the program. These metrics should be helpful in evaluating the success of the program on a larger scale and in communicating relevant information to policymakers and to other stakeholders. The progress reports should also be tailored to summarize pertinent

information up front and revision of the current tables and figures should be considered. The panel suggests a set of potential additional qualitative and quantitative metrics:

Quantitative:

1. Documenting number of post-training funding applications and acceptances – even submitting a grant proposal may be an important milestone. As discussed in the following section, NIH can obtain this information from its grant programs, but a broader consideration of other non-NIH grant programs would be additionally informative.

2. Documenting all patents filed and awarded, technologies licensed, industrial research contracts, products reaching FDA, and products marketed.

3. Documenting non-peer-reviewed technical reports and briefs.

4. Tracking trainees for several years, especially following the completion of training, to determine what they are doing once back in their home country. Specifically, do these former trainees train a new generation of scientists? Annual reports do discuss research capacity development; however, increased consistency between programs and greater detail would be helpful.

Qualitative:

1. Recognize contributions made to countries' population and health policy. Such a metric may encourage grantees and trainees to produce research digests for policymakers.

2. Assess contributions of trainees who do not go on to pursue a traditional academic career.

3. In the progress reports, focus on "success" stories and trainee trajectories rather than worrying about tracking every single trainee. Additionally, there should be a section submitted by international collaborators or former trainees to discuss the specific needs in their countries and how the ITRPH program is addressing those needs and affecting change.

   Recommendation: FIC should consider new models for structuring progress reports, including both reporting and metrics.

H. Long-term Trainee tracking

All PIs had information about the whereabouts of their long-term trainees immediately after training completion. PIs could also account for their trainees' current professions

and locations. Yet, this information is not well documented in the annual progress reports, and it is difficult to assess trainee success without a complete set of post-training records. For trainees who returned to their home countries and did not continue collaboration with their mentors, it was not clear whether the PIs knew their whereabouts. There is a need for a common system to track trainees upon completion of the program and for years to come. It has been suggested that a common FIC-wide website should be established that allows trainees to electronically update their information. This would promote interaction among trainees, facilitate trainee location for evaluation purposes, and remove the administrative burden from the PIs. Panelists suggest that some sort of incentive (perhaps the ability to compete for small, $5,000 grants) should be offered to the trainees who stay in touch and maintain current data on their whereabouts and research interests. Still, there remains the challenge of how to account for individuals who will not participate in such a system.

Recommendation: FIC should create a trainee-tracking program.

Collectively, the findings of this section lead to Global Recommendation 2:

"Administratively, FIC should: establish a better set of evaluative criteria to measure and report on local capacity building, including some type of long-term trainee-tracking system; involve foreign scientists in the proposal review process; and strengthen communication and reporting to NIH partners."

V. PI-level Management: Trainee Selection, Type of Training, Role of ICCs

A. Selection of Trainees

Based on the interviews with the PIs, the review panel found that in-country collaborators (ICC) help to identify future program trainees. The ICCs often do the first screening of the participants and offer strong recommendations to the investigators. In a number of cases, these collaborators are former trainees, or have strong relationships with the PIs. Most PIs conduct pre-recruitment assessments of their future trainees to ensure an overlap of interests. One program also tests the English proficiency of the students using the Test of English as a Foreign Language (TOEFL). Still, some trainees felt that they could benefit from additional clarification and preparation in regards to their role and the program's expectations prior to training commencement. Several trainees indicated that pre-program training in computer skills and English language for scientists would have been very useful.

In most cases, emphasis is currently placed on selecting trainees who have a high likelihood of returning to their home countries following program completion. Several of the programs limit selection of long-term trainees to those who have jobs to return to after their stay in the U.S.

While the selection process of their trainees is varied among PIs, in most countries, knowledge of the program is limited. Trainees indicated that they first heard about the ITRPH program from their mentors in their home institution, but implied that their colleagues at other institutions in their countries had probably never heard of the program. While the heavy reliance on ICCs facilitates trainee selection on behalf of the PIs, it consequently limits the applicant pool.

> ***Recommendation: It is recommended that PIs and ICCs review their selection process with an eye toward increased advertising and transparency.***

B. Type of Training

In addition to the technical training in population studies or reproductive biology, a number of programs also offer training courses aimed at enhancing computer, English language, and communication skills. These courses include English for Scientific Professionals (ESP), summer coursework in writing successful grants and manuscripts, and international video-conferencing seminars. These additional training components were identified as key elements of capacity building that need to be further emphasized in the future.

Some PIs provide support for their students to attend relevant conferences and professional meetings. These activities are limited by cost and not all trainees have the opportunity for this type of professional development. For many, the annual network

meeting is the only opportunity for them to meet and interact with other program participants. The majority of long-term trainees expressed their desire for more opportunities to interact with other ITRPH trainees in their U.S. institution and from other institutions.

> ***Recommendation: FIC should encourage sharing of innovative, non-scientific training (e.g., English language training) for current trainees, perhaps through a common summer workshop, centralized short course offerings, or network meetings.***

C. Role of In-Country Collaborators

The ICCs play a crucial role in trainee selection and mentoring; yet, they neither receive compensation for their efforts, nor have a formalized position or relationship with the ITRPH program. If this relationship were formalized, the ICCs might make an even larger contribution to the program and expend more efforts to ensure that the ITRPH program is fulfilling the specific needs of the country. Areas in which ICCs could contribute more are in the planning of the research program and goals, the identification of in-country funding partners, and in the identification of programs in country that are similar and could be complementary to the ITRPH.

> ***Recommendation: It is recommended that the role of ICCs should be formalized, and some sort of compensation or salary should be provided as an incentive to strengthen collaboration. Additionally, the FIC should involve ICCs in conceptualizing research and in setting research agendas.***

The recommendations of this section lead to Global Recommendation 3:

"FIC should revise the trainee selection process with a more formal role for the ICCs and a focus on transparency. To achieve this, the ICC role should be formalized to include salary and research incentives."

VI. Institutional Capacity Building

A. Centers of Excellence and Research Networks

One of the key lessons learned from early attempts to develop scientific research capacity in developing countries was the importance of in-country institutional support. If the goal is technology and human capital transfer, then training single individuals and sending them back typically does not work. On return, the individuals are frequently overwhelmed with massive teaching and administrative burdens, little infrastructure for performing high quality research, an unsupportive academic culture, political instability, and academic salaries lower than what they could obtain in non-research jobs in government, the private sector, or non-government organizations.

The ITRPH RFAs clearly recognize that this individual-based training approach often is less productive. U.S. grantees are encouraged to identify and work with a limited number of international institutions that have the potential to become "centers of excellence."

In general, the projects in this program have done an excellent job responding to the mandate of institutional capacity building. Long-term partnerships with foreign universities have been established around key scientific goals of the program. A wide range of short, medium, and long-term training mechanisms has been developed to increase scientific expertise at every level of academic status (from pre-doctoral students to advanced faculty). In many cases, the review panel found that the first generation of trainees had gone back to their countries, set up their own independent research labs and programs, applied successfully for other NIH awards, and had begun to send the next generation of trainees to the U.S. for training with FIC support. In fact, it is known that at least 13 of the 86 long-term trainees who have finished the program (15%) and 2 current trainees have received additional NIH grant funding. Grantees are divided relatively evenly between reproductive biology and population studies fields (Table 4).

All of the PIs agree that identifying and working with a limited number of strong foreign centers of excellence has been more successful than the individual-focused approach of the past. However, this approach only works in countries where such institutions exist. A number of stakeholders suggested that research networks might be a better strategy for Africa, where many individual countries lack their own strong central universities. Several examples of such networks that have been successful in Africa include the INDEPTH network of demographic surveillance sites, and the African Census Project (both multi-country collaborations). By focusing on a network of institutions, it is easier to secure jobs for trainees upon program completion. Even if the trainee does not return to his or her home country, he or she may return to another country within the network and continue to build capacity and facilitate collaborations. Panelists agree that while research networks might be a better strategy for Africa, at least in the Population studies programs, they may be more problematic for reproductive biology programs. Currently there exist only a small number of reproductive biology programs in Sub-Saharan Africa; consequently, there is not a pre-existing foundation on which to build networks.

Recommendation: FIC should consider expanding beyond the goal of Centers of Excellence concept to include research networks where appropriate (e.g., Sub-Saharan Africa).

Table 4: Post-ITRPH NIH grantees

Name	Return to home country?	Training Type	Country of Origin	Program #	Specialty	Number
Trainee 1	Yes	Sabbatical	Mexico	#1	Reproductive Biology	R01– GRIP
Trainee 2	No	Postdoc	India	#2	Female reproductive biology	K01
Trainee 3	Yes	PhD	China	#3	Male reproductive biology	R43
Trainee 4	Yes	Postdoc	Uruguay	#4	Reproductive Biology	R01– GRIP
Trainee 5	Yes	PhD	Mexico	#4	Reproductive Biology	R01– GRIP
Trainee 6	Yes	Postdoc	Chile	#4	Reproductive Biology	H79
Trainee 7	Training still in progress	Postdoc	Brazil	#4	Reproductive Biology	R01
Trainee 8	Yes	PhD	Brazil	#5	Population studies	R01– GRIP
Trainee 9	Yes	Postdoc	China	#6	Longitudinal analysis	R01– GRIP
Trainee 10	No	PhD	China	#6	Nutrition	R01
Trainee 11	Yes	PhD	Uganda	#7	Population studies	R01
Trainee 12	No	PhD	India	#7	Population studies	R03
Trainee 13	Yes	MHS	Uganda	#8	International Health	U01
Trainee 14	Training still in progress	MHS	Uganda	#8	Epidemiology, Infectious Disease	U01
Trainee 15	No	PhD	India	#8	Epidemiology, Reproductive Health,	R01

Source: Review Panel analysis of ITRPH data

B. Other Capacity Building Alternatives

A number of individuals indicated that in addition to sending trainees back to their countries, there might be other, equally effective methods to build in-country and institutional capacity. Trainees, ICCs, and PIs alike agreed that more in-country effort should be concentrated in order to cause change. Several suggestions include:

- Satellite Training Sessions–hold in-country training workshops for countries with a large number of trainees and ICCs (e.g., India).

- Distance Learning Opportunities–allow training to occur through online resources and interactions.

- "Sandwich Programs"–allow trainees to begin their training at their home institution, travel to the U.S. to be trained in research methods (perhaps for 1 year), and then return to their home institutions to complete their degree.

- Public Education Efforts–need to establish local support and understanding to accomplish the program goals.

- Create Links to Policy Makers–need to disseminate information at levels beyond the institution in order to ensure that research results are used locally, that research priorities are relevant to local needs, and that local policymakers appreciate the usefulness of local research capacity and training.

- Create a "Fogarty Institute for Advanced Studies " that could be modeled after the Princeton Institute for Advanced Study (http://www.ias.edu) or the Stanford Center for Advanced Study in the Behavioral Sciences (https://casbs.stanford.edu). These institutes operate on rather different models. Princeton has a permanent faculty and brings in visitors, while Stanford runs entirely by hosting visits. Both offer scholars the opportunity to spend a period in an environment where they can focus intensively on their own research in the company of scholars in related fields. An institute such as this would provide an opportunity for all FIC scholars (not exclusively ITRPH trainees) to have short- to medium-term "mini sabbaticals" to work on grant proposals and papers. This would also help establish a network of collaborative relations among FIC trainees. One suggested locale is the African Population and Health Research Center in Nairobi, which was established to provide such opportunities for African demographers.

Recommendation: FIC should promote in-country satellite training (e.g., regional centers and distance learning). The institutions from which trainees are drawn should also have the potential to offer pre-program, in-country, and regional training.

Recommendation: PIs should be encouraged to translate their research findings in-country to build local support and to provide information to policy-makers.

Recommendation: FIC should consider establishing a committee to create a regional "Institute for Advanced Studies" which investigators could use for grant-writing, paper-finishing, and concentrated research efforts (e.g., African Population and Health Research Center (APHRC) in Nairobi).

The findings of this section lead to Global Recommendation 4:

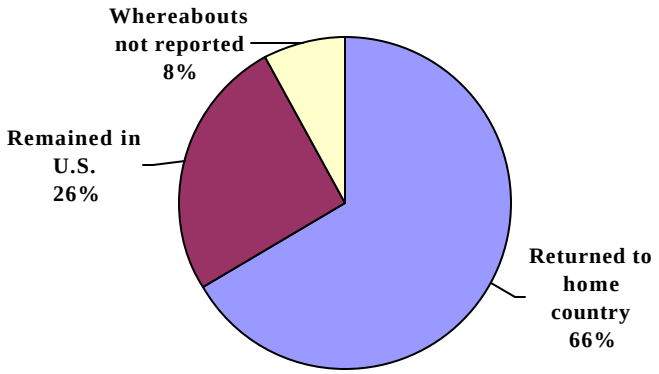
"FIC should expand its goal of creating "Centers of Excellence" to include "research networks" in countries without strong central research institutions. FIC should also consider establishing a committee to discuss the benefit of a Fogarty Institute for Advanced Studies."

VII. Post-training Return and Re-entry issues

A. Post-training trainee return

One of the fundamental goals of the ITRPH program is to support training of foreign scientists in the U.S. who will then return to their home countries and continue to disseminate their new knowledge. Of the 86 trainees who have completed their ITRPH training, 57 of them (66%) have returned to their home countries while the remainder have continued training, secured employment, or found some other way to remain in the U.S. (Figure 6). It is difficult to assess the issue of trainee return, as some individuals who remain in the U.S. truly do continue to collaborate with researchers in their home country and make important contributions. Trainee return rate varies among programs and regions of the world, but generally tends to be lower in the reproductive biology programs (Table 5) and in the Asian and Pacific countries (Table 6).

Figure 6: Post-training locality of long-term trainees (n=86)



Source: Review Panel analysis of ITRPH data

Table 5: Return to home country by training institution (based on completed long-term trainee information)

Cohort	Program #	Returned	Remained	Unknown	Percent remaining
Cohort 1	#1 Reproductive Biology	32			0%
	#2 Reproductive Biology	2	7		78%
	#3 Reproductive Biology	3	5		63%
	#4 Reproductive Biology	4	2	2	25%
	#5 Population Studies	2			0%
	#6 Population Studies	6	1		14%
	#7 Population Studies	5	6	2	46%
Cohort 2	#8 Reproductive Biology and Population Studies	3	1	1	20%
	#9 Population Studies			2	0%

Source: Review Panel analysis of ITRPH data

Table 6: Return to home country by region of origin (based on completed long-term trainee information)

Region	Returned	Remained	Unknown	Percent remaining
Latin America and the Caribbean	39	4	3	9%
Asia-Pacific	11	14	2	52%
Africa	7	4	1	33%
Unknown			1	0%
TOTAL	**57**	**22**	**7**	**26%**

Note: Percentages are rounded to the nearest whole percentage point.
Source: Review Panel analysis of ITRPH data

As discussed in section V.A, PIs select long-term trainees who are likely to return to their home countries. All PIs mentioned that trainees entering their programs are required to sign a clause stating that they will return home after training. Currently, some PIs view the signed clause as a binding contract. They state up-front that they will neither hire any of their ITRPH trainees, nor give them recommendations or support for other jobs in the U.S. Other PIs are more lenient and sometimes facilitate the trainees' desire to remain in the U.S. They have a difficult time forcing their trainees to return to their home countries when they have been offered a faculty position in the U.S., started a family, or received funding for continuing education.

This is a problematic issue to address, as there are extenuating circumstances which make return simply not feasible. However, in order to achieve program goals, trainee return must be further promoted. As stated by a current trainee from Uganda, "it would be otherwise difficult for people to receive this kind of training, so the ITRPH trainees are a really valuable resource for the country and it is essential that they return." Similarly, a former trainee from China said, "in our country we lack communication with other reproductive biologists because few have stayed in our country. We cannot often attend academic meetings in the USA because of the high cost."

> ***Recommendation: It is recommended that FIC use a combination of positive (e.g., re-entry grants, mini-sabbaticals) and negative (e.g., requiring PIs to more carefully select candidates to ensure return and by withholding assistance needed to help trainees remain in the U.S.) incentives to promote trainee return and re-entry into foreign research institutions. ITRPH programs and PIs should share and discuss strategies they use to encourage trainees to return home.***

It should be noted that the trainees who are returning to their home countries are securing occupations that could potentially allow them to influence research capacity development in their country and institution (Table 7). Though the information drawn from the annual progress reports is incomplete, trainees returning to their countries are obtaining professorships, research positions, and other important management and upper-level vocations.

Table 7: Post-training titles of long-term trainees (based on completed trainee information)

Not returning to home country		Returning to home country	
Post-training title	**Number**	**Post-training title**	**Number**
Research Associate	8	Unspecified Profession	34
Postdoctoral Trainee	5	Professor/Assistant Professor	10
Assistant Professor	2	Researcher	3
Industry worker	2	Director	3
Associate Director, Population studies	1	Senior Research Associate	2
Researcher	1	Data Manager	1
Senior Technical Advisor	1	Investigator	1
Resident	1	Postdoctoral Fellow	1
Unspecified Profession	1	Staff Scientist	1
		Graduate Research Assistant	1
TOTAL	**22**	**TOTAL**	**57**

Note: There was only pre- and post-training title information in the progress reports for 22 trainees. Given the few data available, comparing pre-training and post-training titles was not feasible.

Source: Review Panel analysis of ITRPH data

B. Problems with Re-entry and Re-integration

Upon completion of their ITRPH training, trainees are inevitably confronted with difficulties when they return to their home countries and begin the reintegration process. Difficulties with reintegration can loosely be grouped into four categories:

1. During their training in the U.S., trainees are surrounded by state of the art facilities, abundant resources, and easy access to highly trained personnel and mentors. However, upon return, facilities and capabilities are often extremely limited. Institutional support is severely lacking, and trainees often find that they do not have access to necessary resources such as library facilities, on-line journals, and high-speed Internet access. It is extremely difficult to continue with the same level of research when the basic facilities and resources are not available.

2. Some trainees expressed concern about convincing colleagues in their home institution of the value of their new knowledge and training. The "old guards" at these institutions often make it difficult for newly educated faculty to integrate into the academic infrastructure.

3. Thus far, it appears that post-training interaction with other FIC fellows is very limited. This appears to stem from the lack of a central source of information concerning trainee whereabouts for the ITRPH program and for other FIC international programs that may have overlapping interests (e.g., Fogarty International Research and Collaboration Award Program (FIRCA) and AITRP). FIC should facilitate alumni networks.

4. Perhaps most importantly, developing countries do not offer the same types of funding opportunities for research. Consequently, it is often impossible for former trainees to secure the means by which to continue their work and to train others. Similarly, the salaries offered to researchers and academics in developing countries are very low. A former trainee needs a salary to continue his/her research, but would usually be better-paid working for a government institution rather than remaining in academia. There currently are some re-entry grants (e.g., Global Health Research Initiative Program for new foreign investigators "GRIP") for which international trainees can apply. As one PI said, "GRIP grants are a fantastic way to encourage fellows to return to their countries and they have created tremendous positive energy." However, these grants are extremely competitive and very limited in number.

Recommendation: It is recommended that FIC provide more accessible information concerning alternative sources of funding available for foreign researchers. Re-entry grants, funded under the program, should also be considered. Even small grants, $5K a year for perhaps 5 years, can go a long way to help trainees continue their research upon return home.

In addition to these four primary concerns, several trainees emphasized that when they return, they are essentially cut-off from their former academic environments. Though they may continue collaborating with their ITRPH mentors, they no longer are able to keep pace with the rapidly developing fields of reproductive biology and population studies, and do not have training in new techniques or methodology. Many of the former trainees who have returned home wish that they could receive funds to visit the U.S. on an annual or bi-annual basis for refresher coursework and to keep up with the current research trends.

Former trainees who had continued liaison with their home-country institutions found it much easier to return to their former jobs and to reintegrate. PIs have also found that there is a much higher success rate return among trainees that have a guaranteed, post-training position in their home country.

Recommendation: It is recommended that FIC should consider allocating some funding to facilitate trainee return (e.g., funds to finance a computer, some salary supplement, and supplies).

The findings of this section lead to Global Recommendation 5:

"FIC should further emphasize the importance of trainee return by employing both positive and negative incentives. FIC should provide more extensive support for returning trainees to facilitate reintegration."

VIII. Conclusion

The Panel considered five areas: ITRPH's substantive focus; administration, partnerships, and evaluation; PI-level management; institutional capacity building; and post-training return and re-entry issues.

After ten years of operations, the Panel finds that the progress of the International Training and Research Program in Population and Health is impressive. The program is meeting its program goals and making an impact in the areas of international population research and reproductive biology. Additionally, the ITRPH program is filling a critical niche in the international population research community.

The Panel makes recommendations to be considered in each of these areas when preparing for the next round of program competition. Additionally, these recommendations may be applicable to other FIC international training programs and to FIC-wide strategic planning and management.

Appendix A – All Global and Individual Section Recommendations

Substantive Focus of ITRPH

Global Recommendation 1: FIC should broaden the geographic and topical scope of ITRPH research. This expansion may facilitate new collaborations, while strategically soliciting additional funding support from partners both within and outside of NIH.

- For the reproductive biology portfolio, FIC should consider a balance among basic research, applied research, clinical research, and product development in its overall portfolio of research.

- The focus of the next RFA should be broadened in population studies to emphasize aging and adult health, HIV/AIDS, population and environment, nutrition, and migration (though linkages to other programs should be considered when overlap exists).

- The current flexibility regarding the types of ITRPH training available is beneficial. It is recommended that the program maintain this flexibility.

- Geographic diversity should be broadened in reproductive biology programs beyond the current focus on Latin America, India, and China. Current collaborations, however, should also be maintained.

ITRPH Administration, Partnerships, and Program Evaluation

Global Recommendation 2: Administratively, FIC should: establish a better set of evaluative criteria to measure and report on local capacity building, including some type of long-term trainee-tracking system; involve foreign scientists in the proposal review process; and strengthen communication and reporting to NIH partners.

- At least one, and preferably two scientific representatives from developing countries (one population scientist and one biomedical scientist) should be added to the review panel for the next review of applications.

- It is recommended that FIC strive to maintain administrative stability.

- It is recommended that FIC consider whether certain types of activities or program models (e.g., heavy reliance on short-term training) lead to higher administrative burdens and if necessary, introduce additional flexibility in allocating funds to direct administrative subsidies.

- Communication with NIH partner agencies should be improved, perhaps through tailored approaches of informing partners (1-2 page summary of progress reports) and a greater emphasis on face-to-face meetings.

- It is recommended that FIC consider new, non-NIH relationships with complementary programs to work with ITRPH.

- FIC should not try to force interdisciplinary integration between the reproductive biology and population studies fields. Further, FIC should consider integration of ITRPH with other FIC programs, such as the AIDS International Training and Research Program (AITRP) and the International Maternal and Child Health Research and Training Program (IMCHRT), as their goals warrant. Holding joint network meetings may be one way to provide some integration of the programs.

- If the program remains as it is currently configured, combined annual meetings should focus on non-scientific issues (e.g., English language training and re-entry issues) as a means of uniting the reproductive biology and population studies programs.

- FIC should consider new models for structuring progress reports, including both reporting and metrics.

- FIC should create a trainee-tracking program.

PI-level Management: Trainee Selection, Type of Training, Role of ICCs

Global Recommendation 3: FIC should revise the trainee selection process with a more formal role for the ICCs and a focus on transparency. To achieve this, the ICC role should be formalized to include salary and research incentives.

- It is recommended that PIs and ICCs review their selection process with an eye toward increased advertising and transparency.

- FIC should encourage sharing of innovative, non-scientific training (e.g., English language training) for current trainees, perhaps through a common summer workshop, centralized short course offerings, or network meetings.

- It is recommended that the role of ICCs should be formalized, and some sort of compensation or salary should be provided as an incentive to strengthen collaboration. Additionally, the FIC should involve ICCs in conceptualizing research and in setting research agendas.

Institutional Capacity Building

Global Recommendation 4: FIC should expand its goal of creating "Centers of Excellence" to include "research networks" in countries without strong central research institutions. FIC should also consider establishing a committee to discuss the benefit of a "Fogarty Institute for Advanced Studies."

- FIC should consider expanding beyond the goal of Centers of Excellence concept to include research networks where appropriate (e.g., Sub-Saharan Africa).

- FIC should promote in-country satellite training (e.g., regional centers and distance learning). The institutions from which trainees are drawn should also have the potential to offer pre-program, in-country, and regional training.

- PIs should be encouraged to translate their research findings in-country to build local support and to provide information to policy-makers.

- FIC should consider establishing a committee to create a regional "Institute for Advanced Studies" which investigators could use for grant-writing, paper-finishing, and concentrated research efforts (e.g., African Population and Health Research Center (APHRC) in Nairobi).

Post-training Return and Re-entry Issues

Global Recommendation 5: FIC should further emphasize the importance of trainee return by employing both positive and negative incentives. FIC should provide more extensive support for returning trainees to facilitate reintegration.

- It is recommended that FIC use a combination of positive (e.g., re-entry grants, mini-sabbaticals) and negative (e.g., requiring PIs to more carefully select candidates to ensure return and by withholding assistance needed to help trainees remain in the U.S.) incentives to promote trainee return and re-entry into foreign research institutions. ITRPH programs and PIs should share and discuss strategies they use to encourage trainees to return home.

- It is recommended that FIC provide more accessible information concerning alternative sources of funding available for foreign researchers. Re-entry grants, funded under the program, should also be considered. Even small grants, $5K a year for perhaps 5 years, can go a long way to help trainees continue their research upon return home.

- It is recommended that FIC should consider allocating some funding to facilitate trainee return (e.g., funds to finance a computer, some salary supplement, and supplies).

Appendix B – Letter to the Chair of the ITRPH Review Panel

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

National Institutes of Health
Bethesda, Maryland 20892
www.nih.gov

June 4, 2004

Dr. Carolyn Makinson
Massachusetts Institute of Technology
77 Massachusetts Avenue
Room E38-652
Cambridge, Massachusetts 02139

Dear Dr. Makinson:

Thank you for your participation in the review of the Fogarty International Center (FIC) International Training and Research Program in Population and Health, which took place at the NIH on May 17-19, 2004.

As you know, FIC places a very high value on review and evaluation of our programs. We use information from the reviews such as the one in which you participated to make decisions about scientific scope and management of our programs. Knowledge acquired from reviews help us to determine what programs have achieved, what, if any, barriers exist within the program; and what, if any, new and different directions the programs should go. In addition, by utilizing the FIC Framework for Evaluation, which you used for this review, we are able to look across programs to obtain valuable information about our entire research portfolio. The information that you conveyed through this review will be used to formulate the direction of the next five years of the Population program.

I look forward to discussing the recommendations from your committee with FIC staff and our NIH partners in the coming weeks.

Thank you again for your efforts on our behalf.

Sincerely,

Sharon Hrynkow, Ph.D.
Acting Director
Fogarty International Center

Appendix C – ITRPH Review Panelists

Martin Dym, Ph.D. is in the Department of Cell Biology at Georgetown University. Germ cell gene therapy is one of the last frontiers in medicine to be conquered. Type A spermatogonia are the male germ-line stem cells. His laboratory has succeeded in isolating, purifying, and characterizing these stem cells. With the long-term goal of germ cell gene therapy, he is currently focusing on the understanding of the factors that regulate the renewal and differentiation of the spermatogonial stem cells. In recent years, his lab has demonstrated the presence of *c-kit* receptor and LIF receptor on the spermatogonial stem cells. Signal transduction pathways are being characterized upon activation of these receptors with specific ligands. As a preliminary effort, modification of the genome of type A spermatogonia is being attempted using modern approaches to gene modification and transfer, i.e., retroviral transfer of specific genes. Using similar molecular approaches, we immortalized the spermatogonial stem cells. The overall interest of Dr. Dym's laboratory is to understand the process of mammalian spermatogenesis with special focus on spermatogonial stem cell regulation, genetic modification, and transplantation.

Michael J.K Harper, Ph.D., Sc.D. has been the director of both the Consortium for Industrial Collaboration in Contraceptive Research (CICCR) and the Global Microbicide Project (GMP) since their inception in 1995 and 2000, respectively. He is also a professor in the Department of Obstetrics and Gynecology at East Virginia Medical School (EVMS). Dr. Harper brings to CONRAD his expertise in the fields of reproductive biology and fertility regulation. He obtained his Ph.D. in 1962 and his Sc.D. in 1979 from the University of Cambridge, U.K., and his M.B.A. in 1984 from the University of Texas at San Antonio. Dr. Harper has served as a technical officer at Imperial Chemical Industries Ltd., Pharmaceuticals Division (now AstraZeneca PLC), and as a scientific/medical officer in the World Health Organization (WHO) Special Programme of Research, Development, and Research Training in Human Reproduction. From 1975 to 1993, he was a professor in the Department of Obstetrics and Gynecology and the Department of Physiology at the University of Texas Health Science Center at San Antonio, and from 1993 to 1995, in the Department of Obstetrics and Gynecology and the Department of Cell Biology at Baylor College of Medicine. Dr. Harper has been a consultant on reproductive biology to many national and international organizations. He is a co-discoverer of tamoxifen, which is widely used for the treatment of breast cancer. He has published extensively on reproductive biology and contraception, including Birth Control Technologies: Prospects by the Year 2000 (1983).

Carolyn Makinson, Ph.D (panel chair) is Executive Director of MIT's Center for International Studies. Before coming to MIT, she was responsible for the Andrew W. Mellon Foundation's population and refugee programs. She is a member of the Roundtable on the Demography of Forced Migration (1999-2004), convened by the Committee on Population of the US National Academy of Sciences, a member of the Council on Foreign Relations, and a board member of the International Rescue Committee and of Marymount Manhattan College. She has lived and worked extensively overseas, including as a research affiliate at the American University in Cairo, and as a country coordinator in Africa for the Demographic and Health Surveys project. She studied refugee programs in Rwanda, Guinea, and Mozambique as an affiliate of the International Rescue Committee and of Save the Children US during 1995-1996. She received a PhD in sociology and demography from Princeton University in 1986.

Martina Morris, Ph.D. Martina Morris is the Blumstein-Jordan professor of Sociology and Statistics at the University of Washington, and the Director of the Center for Studies in Demography and Ecology there. She has three longstanding research interests: the demographic epidemiology of HIV, trends in earnings inequality, and innovative statistical methodology for the social sciences. She holds several grants from NIH for research on network modeling and network sampling in the context of HIV prevention, and her recent co-authored book Divergent Paths: Economic Mobility in the New American Labor Market has won awards in both Sociology and Economics.

Robert Ssengonzi, Ph.D. is a demographer, sociologist, and health specialist who is knowledgeable about a broad array of demographic, family planning, HIV/AIDS, and other health issues. He is Research Triangle Institute's (RTI) technical manager on the USAID-funded POLICY Project and also directs a USDOL-funded project aimed at combating HIV/AIDS infections among Ugandan workers in the informal sector. Dr. Ssengonzi is skilled in health policy analysis and design, advocacy, NGO capacity building, training, monitoring and evaluation, the use of both quantitative and qualitative analytical techniques in data analysis, and population, reproductive health and HIV/AIDS projections. His work has focused on developing information and systems that inform decision making for policy makers. He has provided technical assistance and training to professionals in developing countries on various aspects of HIV/AIDS, population, family planning and reproductive health. He is experienced in working with people from various professional and social backgrounds ranging from public sector officials to health services professionals, religious and traditional leaders, community-based organizations, private sector organizations, and the general populace. Dr. Ssengonzi has also studied the factors associated with transmission patterns of HIV/AIDS, the impact of the HIV/AIDS epidemic on various population groups including the elderly, and the determinants of infant and child mortality in developing countries. He has extensive field experience working on the implementation of research on sensitive aspects of HIV/AIDS and contraceptive use, including field trials, HIV testing, counseling, care and treatment, partner notification, mapping of sexual networks and partnership attributes, community mobilizations and financial and program management for intervention studies. He has a Ph.D. in demography and sociology from Pennsylvania State University and is a certified public accountant with strong financial and management skills. He speaks five African languages fluently, and can converse in French.

Appendix D – FIC Evaluation Framework

Framework for Program Assessment (Evaluation and Review)[1]
Fogarty International Center

A Performance – Based Review Process

I. Goals and Objectives of Assessment

Goal:
The goal of assessment at the Fogarty International Center (FIC) is to:

Provide the tools and information necessary to improve each FIC sponsored program to achieve the FIC mission.

Document progress and successes of the programs.
Provide new directions for FIC programs
Identify role of the programs in fulfilling the FIC Mission:

The Fogarty International Center promotes and supports scientific research and training internationally to reduce disparities in global health.

Identify commonalities among FIC programs

A. Guiding Principles:

- ✓ Assessment is a continuous quality improvement, review process.
- ✓ The primary responsibility for continuous assessment, reporting and analysis rests at the Program Officer (PO) level.
- ✓ Assessment will focus on outputs, outcomes and impacts and mechanisms to ensure that these occur. While reporting of metrics (number of trainees achieving advanced degrees, number of publications etc.) is necessary, meeting stated metric goals can become a check off exercise with little accomplished. Reviews will go beyond metrics and will depend on the basic principle of external peer review and recommendations. Evaluation, on the other hand, will include a major component of data collection and analysis.
- ✓ The assessment process will consider innovation, flexibility and risk-taking positively.
- ✓ Programs must be assessed against their own goals and objectives, taking into account fiscal resources and granting mechanisms.
- ✓ Review and evaluation will use retrospective measurements of the achievements over a certain time period (eventually a cyclical period) based in part on measured

[1] For the purposes of this paper the term assessment is defined as the valuation of a program or procedure made by experienced persons according to their discretion. The process of assessment can be accomplished either through a review or an evaluation. An evaluation is defined here as a large scale semi-quantitative judgment of a program done after a significant period of program operation; a review is defined as a more qualitative inspection of a program conducted after a relatively short period of program operation

quantitative outputs, outcomes and impacts (metrics), as well as success stories and more qualitative outputs, outcomes and impacts. This information will be used to make recommendations for the future.

B. Specific Objectives:

- ✓ To stimulate the performance of programs at FIC and to encourage innovative approaches to address problems and issues relating to global health disparities.
- ✓ To demonstrate sound stewardship of federal funds and the programs they support.
- ✓ To produce guidance for program officers and FIC management, to strengthen programs, improve performance, enhance funding decisions, demonstrate public health and economic benefits, and promote sound program policies, and evaluate mature programs.
- ✓ Provide mechanisms to identify program accomplishments to FIC, NIH, HHS, funding agencies, national and international partners and the US Congress.
- ✓ Identify, share and stimulate best-management practices for improvement in performance in the FIC programs as a whole.
- ✓ To publish the results of the reviews and evaluations in peer-reviewed journals

II. Elements and Basis for Review and Evaluation

The review and evaluation process is a continuum through a period of time (to be agreed to). It begins with the FIC Strategic Plan. Program plans, in the form of a well-developed Request for Applications (RFA) and Program Announcements (PA) are then developed with the input of the stakeholder community. The program officer will be in charge of ensuring that the appropriate stakeholder community is involved in the development of the program plan and the RFA. The program officer will monitor the progress of trainees and projects and may visit a project to interact with its management team, faculty staff, institutional administration and constituents. If mutually decided, a specialized team of experts can visit a project to advise it and make specific recommendations about specific elements and or issues (review visit). This type of correction can help a project correct itself mid-course rather than wait until the end of the project to terminate it for its weaknesses. The process will culminate with a visit of a group of experts, a Review Panel (RP) during year 4/5 of the program (this will differ from program to program and will depend on the program cycle) or at an appropriate time in the program. During year 9/10 of the program, a program evaluation will take place that will include data collection and data analysis by a contractor who specializes in evaluation.

A key to effective program review is the degree to which the review is normalized to the resources, objectives and program planning of the individual program. Given that each program has different financial resources, utilizes different talent pools with various specialties, faces different issues in host countries, works under unique institutional

policies, and uses different approaches to reducing global health disparitities, the review should be tailored to take program variability into account.

A. Program Development

The foundation for individual program review is a well-developed program plan that culminates in an RFA. Importantly, planning a program will normally require a two year lead time to allow sufficient input, partnership development and administrative review Each program has its own RFA that, in addition to other materials developed in addition to the RFA act as a strategic plan for that program. The RFA is keyed into the FIC, NIH, HHS Strategic Plan as well as the strategic plans of the program partners. Planning cannot be stressed enough in its importance. It can be based on experience, program results in the past, and stakeholder needs and expectations. Each program should have a plan developed which addressing its goals and objectives. Although this plan need not be formalized and written down, have a written form will ensure continuity for the program. The program plan can be informed through consultations, workshops, and meetings. It should be specific to resource needs, managing the program to meet those needs, data needs, and data gathering, analysis and storage.

A program plan, reflecting the input of management and constituents, will include:

- ✓ Vision and focus of where the program is heading and why;
- ✓ Backgrounds on issues and mechanisms for establishing priorities for investment of resources; and
- ✓ Goals and objectives and performance milestones targets that provide guidance for evaluating program performance.

Planning is fundamental to program assessment. Developing the understanding, communication and data collection processes necessary to meet the basic goals of the program is necessary. A program should be reassessed and new planning (planning workshops, planning meetings etc.) take place every five years or as appropriate. Of course network meetings can also be used as part of the continuous review and planning for a program.

B. Self-Assessment Process

Each program should conduct self-assessment and analysis on a regular basis in between the program assessments. Each program's self-assessment will be based on performance milestones unique to that program, as well as the criteria given below for all programs. Annual self-assessment can be accomplished at network meetings or following the submission of progress reports from the projects under the program. It is important that the self-assessment will include identification of results, potential problems and mechanisms. Self-assessment and program analysis is a checkpoint in preparation for the program review and program evaluation, which will occur at regular intervals. Analysis of program data should be conducted in conjunction with self-analysis. In some cases, both collection and analysis of program data may need to be contracted out

Data collected by the program could include:

- ✓ Reporting major research accomplishments – Publications in high profile journals; citations; trainee training; successful new grant applications; presentations at international meetings (and abstracts);
- ✓ Career accomplishments – tracking the path and impact of graduates who have entered a health field, research, academia or government; percentage of trainees returning to country of origin (brain drain issue); membership on scientific or policy committees; membership on advisory panels; analysis against control groups.
- ✓ Clinical Benefits – improved understanding of new or existing diseases; improved tools to detect, diagnose, treat, prevent disease; development of treatment or treatment regime for disease.
- ✓ Institutional Changes – creation of networks, collaboration among labs; building infrastructure (labs, departments, research groups); provide critical mass; establish political support for institution, project; establish lab as regional center.
- ✓ Changing the Research/Health Care Agenda – Documentation of the changes in approach to solving global health care issues (e.g., laws impacted or changed, policies created or altered, awareness altered; media attention), better public health programs.
- ✓ Information Use – Documentation of how, when and in what way information was used by the target constituents to implement and/or change the ways they conduct business, use resources, and/or change the quality of life, improve health and treat disease.
- ✓ Qualitative Effects – Qualitative description of impact of program on training, health, and social effects – success stories.
- ✓ Other

C. Reporting Framework

The key to continuous assessment is regular communication between the PI and the PO. Periodic reporting by the PI should be a routine part of this communication in order to document accomplishments and impacts in meeting program goals. It is this mechanism that specifically allows for qualitative measures of accomplishment to be addressed, such as health and/or economic gains made by implementation of program results. Reporting following significant project events should be mandated (e.g., publications in refereed journals, significant research findings, health care advances resulting from FIC grant activities, technical reports, workshops, special events). Fogarty is currently working on a standard format of quantitative and qualitative measurements and which will allow analysis across many programs.

III. Assessment Criteria

Continuing assessment is designed to strengthen, improve and enhance the impact of FIC. There are several important criteria that reflect the effectiveness of the FIC program and establish benchmarks that describe expected performance levels:

Areas of Assessment:

1. **Program Planning**
2. **Program Management**
   - **a. Project Selection**
   - **b. Recruiting Talent**
   - **c. Institutional Setting**
   - **d. Program components**
   - **e. Human Subjects and Fiscal Accountability**
3. **Partnerships and Communication**
   - **a. Partnerships**
   - **b. Communication**
4. **Results**
   - **a. Program Input**
   - **b. Program Output**
   - **c. Program Outcomes**

Each is described in detail below:

1. Program Planning

Effective programs will use the strategic planning framework of the FIC as well as that of any partners as a basis for developing their RFA based on the needs of the U.S. scientific community, host countries, and as identified in collaboration with stakeholders such as other government agencies, foreign scientists, experts in the field. Effective planning may also involve regional programs. Partnerships with other agencies and organizations are considered important. Program plans will be reviewed annually and amended as necessary. These changes will be communicated to all involved parties (FIC Admin, NIH partners, PIs etc.). Sufficient time should be allotted into the planning process to maximize input and RFA preparation. Program planning will involve input from all consistuencies important to the program.

Suggested Indicators of Performance:

- Evidence of a planning process and a plan (priority determination, clear articulation)
- Relevance of program to FIC, NIH IC, HHS strategic plans
- Stakeholder involvement (numbers, duration, roles) in planning
- Integration of input into planning
- Reevaluation of program goals over time
- Strategic planning process

Suggested Questions:

- What was the strategic planning process?
- What role do stakeholders have in setting the goals? The priorities?
- Who provided input for the initiative? How were stakeholders identified? How were they involved?
- How are modifications to the initiative implemented?
- Are the goals difficult, risk taking goals? Do they convey vision?
- How do goals fit into FIC, NIH, HHS strategic plans and initiatives?

2. Program Management

a. Project Selection: The program incorporates an excellent and relevant peer review process selecting those proposals that receive consistently high marks for merit, application and priority fit. The selection/review process should take into account host country needs in the program's scientific area. The program officer role should be well defined.

Suggested Indicators of Performance:

- Review process including: composition of panels, review criteria, quality of feedback to PI, amount of time allowed for review, conflict of interest issues and involvement of program officer

Suggested Questions:

- Under what institute/center did the review take place?
- Is the composition of the review panel appropriate to the program?
- If the program was interdisciplinary in nature, was the panel adequate to address all facets of the program?
- Are the review criteria appropriate and does the panel employ them? Were international issues been taken into account
- What was the role of the program officer in the selection of the panel? In the review?

b. Recruiting Talent: Every program will attract a variety of talent. The best efforts will involve the best talent. The program must have mechanisms in place to identify and attract the best and most appropriate talent available.

Suggested Indicators of Performance:

- Recruitment of new/young investigators; recruitment of foreign investigators; success rate; minority applications; interdisciplinary teams; turnover of investigators

Suggested Questions:
- How does the program advertise its RFA?
- How does the program make certain its RFA attract new talent, international talent and interdisciplinary teams?

c. **Program Components**: Each program is made up of various projects that come together to form a program. It is the role of the PO to see to it that the various program components have a chance to interact and gain experience from one another. The whole program should have a greater effect than the sum of its parts.

Suggested Indicators of Performance:
- Network meetings; other meetings/ways at which PIs and/or trainees get together

Suggested Questions:
- Are there networking opportunities available under the Program?
- What are some successful interactions that have been encouraged?

d. **Institutional setting:** Programs vary in their institutional setting and institutional support. The program should be well supported by both the academic institution(s) involved and the federal institutions involved. There must be appropriate business practices available at both the domestic and the foreign institution for grant implementation to go smoothly.

Suggested Indicators of Performance:
- Matching funds; mentorship support; laboratory support; administrative support and good business practices

Suggested Questions:
- Does the institution provide additional or matching funds for the program?
- How supportive is the institution for the program?
- How involved is the administration of the institution with the program?

e. **Human Subjects and Fiscal Accountability**– Programs should demonstrate that they have appropriate mechanisms in place to account for federal funds and are properly documenting protocol reviews for human subjects.

Suggested Indicators of Performance:
- Presence of operational IRB; good accounting practices; good documentation practices; assurance that all intended funding is reaching the foreign collaborator and the trainees.

Suggested Questions:

- Is there need for IRB review in this program? If so, does the institution (US and foreign) have a functional IRB? What are its credentials? Have they reviewed projects under this program?
- What role does the foreign institution play re. accounting under this project? How well are expenses documented? Is the funding reaching the foreign collaborator and the trainees? Is the funding being used to support agreed activities?

3. Partnerships and Communication

a. Partnerships: federal, national and international partnerships are essential to addressing global health issues. Partnerships should be attracted, nurtured and maintained and will be examined during the assessment process.

Suggested Indicators of Performance:

- Numbers of partnerships; different types of partnerships (NIH, HHS, other federal, international, interdisciplinary, NGOs, industry); involvement of partners in the development of strategic goals; funds from partners; cost of partnership

Suggested Questions:

- How were partnerships developed? What role did management play?
- Do the partners provide a significant contribution in funding or human resources?
- Could the effort have succeeded without the partnership?
- Has the program established long-term relationships that continue to be productive?
- What is the cost/benefit ratio of the partnerships?

a. Communications: To be fully successful, scientific results must be communicated to the user community and utilized. During the assessment the link of the program to the user community will be reviewed and implementation of the science into policy or other working frameworks will be assessed.

Suggested Indicators of Performance:

- Appropriate community input into the strategic planning; informational meeting/training sessions held with community; involvement of community on advisory board of program; involvement of community in selection of trainees; involvement of program in the community; demographics of contacts and efforts;

requests for information, presentations; community needs surveys; user community feedback (mechanisms and tracking)

Suggested Questions:

- Has the program defined its user community? Are they identified in the RFA? Do the projects have plans to interact with the user community?
- Are needs assessments of the community conducted?
- How does the program maintain contacts with the user community?
- What methods and tools does the program use to transmit scientific findings and results? How effective are they? Is the program on the forefront of using new technologies to improve their information transfer capabilities? Does the program present results and finding in the ways useful to the community?
- What role do users have in reviewing the progress of the program?
- What are the communication efforts the program makes?
- How satisfied is the user community? Are they getting the information they need? When they need it? If not, why not?
- How do program assess their effectiveness in working with the user community?
- Do the programs have flexibility to adjust and react to unanticipated events that require new research and outreach activities?

4. Results of the Program

Depending upon age of a program, significant results will fall into different categories. The following should be documented and reported, analyzed and evaluated:

a. Program Input – the total of the resources put into the program (funds and as kind input from partners nationally and internationally – any "enabling resources")

b. Program Outputs – The program must be managed to produce program outputs which are the immediate, observable products of research and training activities, such as publications or patent submissions, citations, degrees conferred. In the best sense, quantitative indices of output are tools for the program. They allow POs and PIs to track changes, highlight progress and spot potential problems. Trends and variations in output may be much more significant than observations of the steady state. Fogarty may eventually use some of this data for benchmarking purposes. (expected for younger and older programs)

Suggested Indicators of Performance:

- Number and list of publications (journal articles, book chapters, reports etc.); number and list of presentations; number of trainees; field of training? Number and type of degrees/certificates earned; number and list of meetings and attendance at meetings.

Suggested questions:

- What type of publications have been produced and how have they been utilized, distributed? Is the publication a direct result of the training?
- What types of students have been trained, in what areas and what degree has been earned?
- What meetings have been held? Who attended? What area was discussed? Was there any evaluation conducted?

c. Program Outcomes – Longer-term results for which a program is designed to contribute, such as strengthened research capacity within the U.S. and foreign laboratory, effective transfer of scientific principles and methods, success in obtaining/attracting further scientific and/or international support. (expected for more mature programs)

Suggested Indicators of Performance:

- Number of laboratories started: number of new grants or new funding procured; scientific methods discovered – number and type; scientific departments started or strengthened; awards received; careers enhanced.

Suggested Questions:

- In what scientific areas were laboratories started? Was this totally lacking or is this supplemental? Do the labs support training? Are they well funded and supported by the institution? What percentage of the time do the PIs conduct research vs. administration and other duties? Is laboratory direct result of training?
- What scientific principles were developed? Who is using them? Are they used internationally? Is methodology a direct result of training?
- Where does the new grant funding/new funding in general come from? National or International? Is the new research funding a direct result of the training?
- Did any trainees or PIs receive awards as a result of training? If so, list and describe how training influenced this.
- Did the training influence any trainees' careers? How? Were they are promotions?

d. Program Impacts – The total consequences of the program, including unanticipated benefits. These can include the influence of research activities on clinical public health practice or health policy, success in establishing a sustainable career structure, affecting the career path of

trainees, changes in health care systems, alterations in health care laws. Demonstrating impacts requires more complex analysis and synthesis of multiple lines of evidence of both a quantitative and qualitative nature (expected for the most mature program).

. ***Suggested Indicators of Performance:***

- New policies adopted or advanced; new clinical procedures adopted; new career structure in place: alteration of health care system; alteration of health care laws

Suggested Questions:

- What were the new policies adopted as a result of training provided by this program? How was the trainee or training involved with the policy?
- What new health practice was adopted as a result of training and how was this linked to the training?
- Were any health laws changed as a result of the program and how did this come about?
- Are there any economic impacts that can be demonstrated as a result of training? Environmental impacts? Health care impacts (laws, policies; systems etc.) How do these relate to training?
- Are there any success stories (using the metrics described and others as needed)? How do these relate to the training?
- Is impact local? National? Regional? International?
- Are partners involved in impact? Who are they and how are they involved?

IV. Assessment Roles

A. Role of the Fogarty International Center Advisory Board (FICAB) and FIC Administration

The review and evaluation process and schedule should be proposed at the program officer level and approved at the FIC administration level. It is anticipated that the Advisory Board (AB) will play a key role in assessment, either by chairing or co-chairing the Program reviews or by participating in the teams in some official capacity. Thus, the Program review panels (PRPs) can be considered a subcommittee of the Federal Advisory Committee Act (FACA) chartered FIC Advisory Board. Reports developed by the review panels will be approved and distributed by FIC administration in conjunction with the FIC Advisory Board. FIC will annually communicate the results of all the FIC assessments to the Director of NIH, the Secretary of HHS and to the Congress.

B. The Role of the Program Officer (PO)

The FIC has ultimate responsibility for the excellence and effectiveness of FIC programs. The PO will be responsible for the day-to-day assessment and analysis of the program progress. The PO will work with the Evaluation Officer to analyze program progress, synthesize program results, and to set up the review or evaluation. Together they will determine the appropriate outside experts to be part of the review as well as determine specifics of the review e.g., dates, sites, presentations, and agenda.

C. Role of the Evaluation Officer (EO)

The evaluation officer, in coordination with the FIC PO's and the FIC administration will be responsible for setting the annual schedule for review and evaluation. She will apply for all funds for reviews and evaluations and will work out all budgets with the POs. She will work with the PO to set the agenda and schedule for the reviews. She will provide training for review chairs and members. She will work with review panel to conduct the review write the final report and with the FIC administration on the annual assessment report to the Director of NIH, the Secretary of HHS and to congress. She will schedule an annual meeting of FIC staff to discuss of all the assessments that have taken place in a given year. She will work with other NIH IC s and other experts on assessment to ensure that the Fogarty assessments are current. She will serve as the planner and interface for program evaluations. The EO will be available to work with the PO on program analysis and synthesis of program results.

D. Program Advisory Visit – Make-up and Role

The program advisory visits are more informal designed to enable program officers to make informed mid-course corrections for projects or programs in their portfolios. They should be small in nature and targeted to a specific question or set of questions the program officer feels needs to be addressed. They do not need to be lead by an FIC advisory board member, but that is an option. There should be a summary report following advisory visits.

E. Program Review Panels (PRPs) – Make-up and Role

At five-year intervals a visiting committee, Program Review Panel (PRP) will conduct a formal review of the FIC programs using the formal framework and criteria given in Section III. The panel will be made up of 4-8 members, including at least one or as many as two, FICAB members, and 3 to 6 experienced administrators and decision-makers, health care professionals and scientists as well as people experienced in program review from other disciplines as appropriate. The PRP can include, but not be limited to, persons such as:

- ✓ Deans or Associate Deans of Appropriate Colleges or Universities

- ✓ World renowned scientists in appropriate fields
- ✓ Executives of national and international health care or related agencies
- ✓ Executives of national and international health care NGOs
- ✓ Officers of appropriate commercial and industrial entities
- ✓ Recognized medical practitioners in appropriate fields
- ✓ Expert international scientists or administrators who are stakeholders or partners in the program
- ✓ Scientists from partner institutions (IC).
- ✓ Representative with fiscal expertise (e.g., person involved with grants management).

PRP members should be highly respected and recognized in their fields. Panel membership should be jointly determined and agreed to by FIC staff and the AB as well as the evaluation officer. An individual respected by all parties, very familiar with FIC objectives and programs, and someone with a longer-term commitment to FIC should chair the PAT.

Using any and all material available and necessary to conduct its review, the role of the PRP should be as follows:

- ✓ To document and report on the program's overall productivity and accomplishments relative to FIC's mission and goals and the programs RFA and level of support.
- ✓ To assess the program's overall scientific or educational strength (e.g, by the significance of scientific or public health related advances and impacts, the rigor of the planning process, the level to which the best talent and resources have been brought to bear on program's goals and objectives and the success in meeting them, the rigor of the self –assessment process, publications, patents and other metrics of output).
- ✓ To assess the effectiveness of the programs management in meeting stated goals and objectives and in providing overall leadership for the program.
- ✓ To assess the program's partnerships and linkages, both nationally and internationally.
- ✓ To assess the program's position and role in its host institution and host country.
- ✓ To assess, considering all the above, the program's potential for growth.

Based on these assessments, the PRP should provide the PO and FIC management a comprehensive written report that documents the program's strengths and weaknesses, makes specific suggestions for program improvement, reports program accomplishments and provides for an overall assessment using criteria developed in Section III. The PRP shall have a draft assessment report ready upon leaving the program assessment. A final report shall be due to the PO and the evaluation officer within 30 working days of the review exercise, and is the responsibility of the PRP Chair. Upon receiving the report the PO will have a reasonable time, 21 working days to review the report, make factual comments,

and if necessary write a response. A final version of the report with the PO's input is due to the FIC administration within 60 working days of the review. At the approval of FIC administration, the report will become part of the official record of the program.

Appendix E – ITRPH Interviewees

NIH Partners:

- Rachel Nugent (current PO)
- Robert Eiss (NIH)
- Joel Breman (NIH – original PO)
- Jeanne McDermot (former PO)
- Ken Bridbord (NIH)
- Richard Suzman (NIA)
- Koji Yoshinaga (NICHD)
- Gabriel Bialy (NICHD)
- Rebecca Clark (NICHD)
- Steve Kaufman (NICHD)

Principal Investigators:

- John Herr – University of Virginia
- Barry Popkin – University of North Carolina, Chapel Hill, Carolina Population Center
- Tukufu Zuberi – University of Pennsylvania, Population Studies Center
- Ron Gray – Johns Hopkins University
- Jerome Strauss – University of Pennsylvania, Reproductive Biology Research Training for Latin America
- Frank French – University of North Carolina, Chapel Hill, Laboratories for Reproductive Biology
- Arland Thornton – University of Michigan
- Michael Conn – Oregon Health Sciences University

Other Expert:

- Jane Menken (University of Colorado)

Long-term Trainees:

- Gilbert Brenes (current trainee)
- Juan-Enrique Schwarze (current trainee)
- Frederick Makumbi (current trainee)
- Soccorro (Connie) Gultiano (current trainee)
- Catherine Kibirige (current trainee)
- Julieta Perez-Amador (current trainee)
- Cecilia Brothers (former trainee in Mexico)
- Guadelupe Maya Nunez (former trainee in Mexico)
- Rossana Sapiro (former trainee in Uruguay)
- Dirgha Ghimire (former trainee in Nepal)

In-Country Collaborators (ICC):

- Jagannadha Rao (current ICC in India)
- Alfredo Ulloa-Aguirre (former trainee and current ICC in Mexico)
- Vrinda Khole (former trainee and current ICC in India)

Appendix F – Long-term Trainee Country of Origin by Program

Countries represented by Program (Long-term trainees only)			
Cohort	**Program #**	**Countries**	**# trainees**
Cohort 1	Program #1	Argentina	10
		Chile	7
		Mexico	19
	Program #2	India	16
		Indonesia	1
		Korea	1
	Program #3	China	10
		India	5
		Kenya	1
	Program #4	Argentina	9
		Brazil	2
		Chile	5
		Columbia	1
		Mexico	2
		Uruguay	1
	Program #5	Brazil	1
		Nepal	1
		South Africa	2
	Program #6	China	7
		Ecuador	1
		Philippines	4
		Russia	1
		Thailand	3
	Program #7	Argentina	3
		Cameroon	1
		China	1
		Ethiopia	1
		Gambia	1
		Ghana	1
		India	3
		Kenya	1
		Lesotho	1
		Malawi	1
		Mexico	6
		Nigeria	3
		Poland	1
		Sierra Leone	2
		South Africa	1
		Uganda	1
		Venezuela	1
		Zimbabwe	1
Cohort 2	Program #8	China	1
		India	1
		Uganda	10
		Ukraine	1
		USA	1
	Program #9	Brazil	1
		Costa Rica	1
		Mexico	3
Source: Review Panel analysis of ITRPH data			

Appendix G – ITRPH RFA Travel Guidelines

In regards to trainee travel, the RFA states:

- Funds may be requested for round trip economy class airfare on U.S. carriers (to the maximum extent possible) and local ground transportation for long term foreign trainees to travel to the U.S., U.S. trainees to travel to the foreign site for extended training and foreign trainees to participate in short courses or attend scientific conferences to present their results. (NRSA substitute pages, trainee travel)

- Funds may be requested for per diem and lodging for foreign trainees to participate in short courses or attend scientific conferences to present their results. (NRSA substitute pages, trainee travel)

Pertaining to faculty travel the RFA states:

- Funds may be requested for round trip economy airfare on U.S. carriers (to the maximum extent possible) for U.S. faculty providing extended training to go to the foreign site or teach short courses at the foreign site.

- Funds may be requested for per diem and lodging for U.S. faculty to teach short courses at the foreign site.

- Funds should be requested for airfare, per diem and lodging comparable to U.S. government rates

Appendix H – List of ITRPH Publications by Year

2003

Benencia F, Courreges MC, Coukos G. Intraperitoneal oncolytic and in situ tumor vaccination threapy with replication-competent herpes virus. Current Gene Therapy, 2003, 3(2):113-25.

Buer, Sen, Manda A, Shetty J, Jagathpala, SLLP1. A Unique, Intro-Acrosomal, Non-Bacteriolytic. Lysozyme-Like Protein in Human Spermatozoa. Biology of Reproduction, 2003, 68:1525-1537.

Hao Z, Zhonglin, Shetty J. An Oocyte and Early Embryo-Abundant Pepptidylarginine Deiminase-Like Protein which Localizes to Egg Cytoplasmic Sheets. Developmental Biology, 2003, 256:73-88.

Kiddugavu M, Makumbi F, Wawer MJ, Serwadda D, Sewankambo NK, Wabwire-Mangen F, Lutalo T, Meehan M, Ziabin, Gray RH, Rakai Project Study Group. Hormonal Contraceptive use and HIV-1 infection in a population-based cohort in Rakai, Uganda. AIDS, 2003, 17(2):233-40.

Koenig MA, Lutalo T, Zhao F, Nalugoda F, Wabwire-mangen F, Kiwanuka N, Wagman J, Serwadda D, Wawer M, Gray R. Domestic violence in rural Uganda: evidence from a community-based study. Bull World Health Organization, 2003, 81(1):53-60.

Leanos-Miranda A, Janovick J, Maya-Nunez G, Ulloa-Aguirre A, and Conn PM. Misrouted proteins as a novel disease etiology and therapeutic target: rescue of hyogonado-tropic hypogonadism-causing and manufactured mutants as a proof of principle, in Kumar R. Ed Molecular Endocrinology: Methods and Protocols. Humana, 2003, In Press.

Li C. Social-Political Changes and Inequality in Education. Sociological Research, 2003, 3.

Li C. Education Attainment and Income. Social Science in China, 2003, 3.

Rao KBC, Jayasimha. Cloning and characterization of a novel sperm associated iso-antigen (E-3) with denfensin/lectin-like motifs expressed in rat epididymidis. Biology of Reproduction, 2003, 68:290-301.

Sawangdee Y, Wongsalchue T. Techniques of Data Gathering Procedures in Qualitative Research. Faculty of Education, Chulalongkom University. Journal of Research Methodology, 2003, 16(3).

Shetty J, and Mandal A. Equatorial Segment Protein (ESP): An Alloantigenic Glycoprotein that Mediates Sperm-Egg interactions and Provides Evidence for an Equatorial Segment Subcompartment in Acrosomal Vesicle Stage Spermatids. Biology of Reproduction, 2003, In Press.

Ullao-Aguirre A, Janovick J, Leanos-Miranda A, Conn PM. Misrouted Cell Surface Receptors as a Novel Disease Etiology and Potential Therapeutic Target: The Case of Hypogonadotropic Hypogonadism Due To Gonadotropin-Releasing Hormone Resistance, Expert Opinion on therapeutic Targets. 2003, In Press.

Wongsalchue T, Sawangdee Y. The Efects of Water Sources for Agriculture on Out Migration of the Northeastern Region, Thailand. Faculty of Education, Chulalongkom University. Journal of Research Methodology. 2003, 16(1).

Yang G, Zhang Y-L, Buchold GM, Jetten AM, O'Brien DA. Analysis of germ cell nuclear factor transcripts and protein expression during spermatogenesis. Biology of Reproduction, 2003, 277:1620-1630.

2002

Allen TR, Walsh SJ, Cairns DM, Messina JP, Butler DR, and Malanson GP. Geostatistics and Spatial Analysis: Characterizing Form and Pattern at the Alpine Treeline. (eds. M. Bishop and J. Shrader.) Praxis Scientific Publishing in Cooperation with Springer-Vertag. Geographic Information Science and Mountain Geomorphology, 2002.

Bagavant H, Kurth B, Tung KSK. Induction of experimental autoimmune ovarian inflammation in Cynomolgus Macaque (Macaca fascicularis). American Journal of Pathology, 2002, 160:141-149.

Barber JS, Pearce LD, Chaudhary Indra and Gurung S. Voluntary Associations and Fertility Limitation. Social Forces, 2002, 80(4):1269-1301.

Bawah AA. Spousal Communication and Family Planning Behavior in Navrongo: A Longitudinal Assessment. Studies in Family Planning, 2002, 33(2):185-194.

Brahmbhatt H, Bishai D, Wabwire-Mangen F, Kigozi G, Wawer M, Gray RH, The Rakai Project Group. Polygyny, maternal HIV status, and child survival: Rakai, Uganda. Soc Sci Med, 2002, 55(4):585-92.

Brothers S, Janovick JA, Maya-Nunez G, Cornea A, Han X, Conn PM. Conserved mamalian gonadotropin-releasing hormone receptor carboxyl terminal amino acids regulate ligand binding, effector coupling and Internalization. Molecular and Cellular Endocrinology, 2002, 190(1-2):19-27.

Castro-Fernandez C, and Conn PM. Regulation of the gonadotropin-releasing hormone receptor (GnRHR) by RGS protein: role of the GnRHR carboxyl-terminus. Molecular and Cellular Endocrinology, 2002.

Castro-Fernandez C, Brothers SP, Conn PM. A Mutation (D229S) Differentially Effects Gonadotropin-Releasing Hormone Receptor Regulation By RGS10, RGS3 and RGS3T. Molecular and Cellular Endocrinology, 2002.

Castro-Fernandez C, Conn PM. Regulation of the gonadotropin-releasing hormone receptor (GnRHR) by RGS proteins: role of the GnRHR carboxyl terminal. Molecular and Cellular Endocrinology, 2002, 191:149-156.

Castro-Fernandez C, Janovick JA, Brothers S, Fisher RA, Ji TH and Conn PM. Regulation of RGS3 and RGS10 palmitoylation by gonadotropin-releasing hormone. Endocrinology, 2002.

Conn PM, Leanos-Miranda A, and Janovick JA. Therapeutic Rescue of Misfolded Gene Products, Molecular Interventions. Protein Origami, 2002, 2(5):308-316.

Depbuur C and Bawah AA. Are reproductive preferences stable? Evidence from rural northern Ghana. Genus, 2002, LVIII(2):63-89.

Du S, Lu B, Zhai F, and Popkin BM. A new stage of nutrition transition in China. Public Health Nutrition, 2002, 5(1A):169-174.

Du S, Lu B, Zhai F, and Popkin BM. The nutrition transition in China: a new stage of the Chinese diet. In Caballero B and Popkin BM eds. The Nutrition Transition: Diet-Related Diseases in the Modern World. London. Academic Press, 2002, 204-221.

Gendreau F, Tabutin D. Vieillissement de la population en Afrique du Sud: Caractéristiques et défis, Jeunesse et Vieillesses Démographiques et Sociétés. Academia-Bruylant/l'Harmattan, 2002, 125-141.

Gray RH, Wawer MJ, Kiwanuka N, Serwadda D, Sewankambo NK, Mangen FW. Male circumcision and HIV acquisition and transmission: Rakai, Uganda. AIDS, 2002, 16(5):809-10.

Hamil KG, Liu Q, Sivashanmugam P, Yenugu S, Soundararajan R, Grossman G, Richardson RT, Zhang Y-L, O'Rand MG, Petrusz P, French FS, Hall SH. Cystatin 11: a new member of the systatin type 2 family. Endocrinology, 2002, 143:2787-2796.

Han G. Divergence and Convergence: A Comparative Study on Programs and Courses in Schools of Communication and Journalism between China and U.S. Monography of The First China Communications Forum (Zhang, Guoliang and Huang, Zhixiao (ed.)). Shanghai: Fudan Unviersity. Monography of The First China Communications Forum, 2002, 111-124.

Hao Z, and Sen B. TACC3 Expression and Localization in the Murine Egg and Ovary. Molecular Reproductive Development, 2002, 63:291-299.

Hao Z, Wolkowicz MJ, Shetty J, Klotz K, Bolling L, Sen B, Westbrook VA, Coonrod S, Flickinger CJ, and Herr JC. SAMP32, a testis-specific, isoantigenic acrosomal membrane-associated protein. Biology of Reproduction, 2002, 66:735-744.

He B, Minges JT, Lee LW, Wilson EM. Dependence of selective gene activation on the androgen receptor NH2-and COOH-terminal interaction. Journal of Biological Chemistry, 2002, 277:25631-25639.

He B, Minges JT, Lee LW, Wilson EM. The FXXLF motif mediates androgen receptor-specific interations with corregulators. Journal of Biological Chemistry, 2002, 277:10226-10235.

He B, Wilson EM. Electrostatic modulation in steroid receptor recruitment of LXXLL and FXXLF motifs. Molecular and Cellular Biology, 2002, 23:2135-2150.

Hernández-León R and Zñiga V. Social Capital of Mexican Communities in the South. Southern Perspectives, 2002, 6(1):1-4.

Jeyeraj DA, Grossman G, Weaver C, Petrusz P. Dynamics of testicular germ cell proliferation in normal mice and transgenic overexpressing rat androgen-binding protein: A flow cytometric evaluation. Biology of Reproduction, 2002, 66:877-885.

Jha, Nand K. Activation of protein kinase A during human sperm capacitation and acrosome reaction. Journal of Andrology, 2002, 23(5):709-16.

Jun J. Cultural Authority in Rural Childcare. First Issue. Tsinghua Sociological Review, 2002, 38-56.

Jun J, Kaufman J. China and AIDS: The time to act is now. Science, 2002, 296:23-26.

Knodel J and Anh TS. Vietnam's Older Population: the View from the Census. Asia Pacific Population Journal, 2002, 17(3).

Leanos-Miranda A, Janovick J, and Conn PM. Receptor-Misrouting: an Unexpectedly Prevalent and Rescuable Etiology in GnRHR-Mediated Hypogonadotropic Hypogonadism. Clinical Endocrinology and Metabolism, 2002, 87(10):4825-4828.

Marteleto L. O Papel do Tamanho da Familia na Escolaridade dos Jovens (The Impact of Family Size on Schooling). Revista Brasileira de Estudos Populacionais, 2002, 19(2).

Matovu JK, Kigozi G, Nalugoda F, Wabwire-Mangen F, Gray RH. The Rakai Project counselling programme experience. Trop Med Int Health, 2002, 7(12):1064-7.

Maya-Nunez G, Janovick JA, Ulloa-Aguirre AG, Soderlund D, Conn PM and Mendez JP. Molecular basis of hypogonado-tropic hypogonadism: restoration of mutant (E90K) GnRH receptor function by a deletion at a distant site. Clinical Endocrinology and Metabolism, 2002, (87)5:2144-2149.

McCauley TC, Kurth BE, Norton EJ, Klotz KL, Westbrook A, Rao AJ, Herr JC, and Diekman AB. Analysis of a Human Sperm CD52 Glycoform in Primates: identification of an animal model for immunocontraceptive vaccine development. Biology of Reproduction, 2002, 66:1681-1688.

Messina JP and May J. Aerial photography and remote sensing for solving crimes. GIS in Law Enforcement: Implementation Issues and Case Studies. (M. R. Leipnik and D. P. Albert, editors). Taylor and Francis, 2002, 232-240.

Monzon-Bordonaba F, Vadillo-Ortega F, Feinberg. Modulation of trophoblast function by tumornecrosis - A role in pregnancy establishment and maintenance. American Journal of Obstetrics and Gynecology, 2002, 187:1574-80.

Naaby-Hansen S, Mandal A, Wolkowicz MJ, Sen B, Westbrook VA, Shetty J, Coonrod SA, Klotz KL, Kim YH, Bush LA, Flickinger CJ, Herr JC. CABYR, a Novel Calcium-Binding Tyrosine Phosphorylation-Regulated Fibrous Sheath Protein Involved in Capacitation. Developmental Biology, 2002, 242:236-254.

Palloni A, Pinto-Aguirre G, and Pelaez M. Demographic and health conditions of ageing in Latin America and the Caribbean. International Journal of Epidemiology, 2002, 31:762-771.

Popkin BM and Du S. Dynamics of the nutrition transition toward the animal foods sector in China and its implications: A worried perspective. Journal of Nutrition, 2002, In Press.

Rindfuss RR, Entwisle B, Walsh SJ, Prasartkul P, Sawangdee Y, Crawford TW, Reade J. Continuous and Discrete: Where They Have Met in Nang Rong, Thailand. (eds. S. J. Walsh and K. A. Crews-Meyers). Kluwer Academic Publishers: Boston. Linking People, Place, and Policy, 2002.

Ruiz A, Zhang JJ, Sherman NW. An examination of the relationship between caloric expenditure and aerobic capacity among sixth-grade Hispanic students. Res Q Exercise Sport, 2002, 73(1):A11-A11 Suppl.

Sapiro R, Kostetskii I, Olds-Clarke P, Gerton GL, Radice GL, Strauss III JF. Male infertility, impaired sperm motility, and hydrocephalus in mice deficient in sperm-associated antigen 6. Molecular and Cellular Biology, 2002, 22:6298-6305.

Sawangdee Y. An Analysis of William Petersen's Migration Classical Theory. Journal of Population and Social Studies, 2002 UNC, CH 11(1). Molecular and Cellular Biology, 2002, 22:6298-6305.

Shibahara H, Sato I, Shetty J, Naaby-Hansen S, Herr JC, Wakimoto E, and Koyama K. Two-dimensional electrophoretic analysis of sperm antigens recognized by spern immobilizing antibodies detected in infertile women. Journal of Reproductive Immunology, 2002, 53:1-12.

Thomas K. Development projects and involuntary population displacaement: The World Bank's attempt to correct past failures. Population Research and Policy Review, 2002, 21(4):339-349.

Vu TH. The Role of Father in the Family. Sociological Review, 2002, 80(4):24-39.

Wabwire-Mangen F, Kigozi G, Gray RH. Estimation of birth weight and gestational age during the first two weeks of life among home deliveries. International Journal of Obstetrics and Gynecology, 2002, 79(3):255-7.

Walsh SJ, Bilsborrow RE, McGregor SJ, Frizzelle BG, Messina JP, Pan WKT, Crews-Meyer KA, Taff GN, Baquero F. Integration of Longitudinal Surveys, Remote Sensing Time-Series, and Spatial Analyses: Approaches for Linking People and Place. People and the Environment: Approaches for Linking Household and Community Surveys to Remote Sening and GIS. (J. Fox, R. R. Rindfuss, S. J. Waslsh, V. Mishra, editors), Kluwer Academic Publishers: Boston. Kluwer Academic Publishers, 2002, 91-130.

Walsh SJ, Messina JP, Crews-Meyer KA, Bilsborrow RE, and Pan WKT. Characterizing and Modeling Patterns of Deforestation and Agricultural Extensification in the Ecuadorian Amazon. Linking People, Place and Policy: A GIScience Approach (eds. S. J. Walsh and K. A. Crews-Meyer.) Kluwer Academic Publishers, Boston. Linking People, Place and Policy: A GIScience Approach, 2002, 187:214.

Wang Y. Is obesity associated with early sexual maturation? A comparison of the association in American boys versus girls. Pediatrics, 2002, 110:903-910.

Wang Y, Bentley M, Zhai F, Popkin BM. Tracking of dietary intake patterns of Chinese from childhood into adolescence over a six-year follow-up period. Journal of Nutrition, 2002, 132:430-438.

Wang Y, Monteiro C, Popkin BM. Trends of obesity and underweight in older children and adolescents in the United States, Brazil, China and Russia. American Journal of Clinical Nutrition, 2002, 75:971-7.

Wang Y, Wang JQ. A comparison of different international references for the assessment of child and adolescent overweight and obesity in different populations. European Journal of Clinical Nutrition, 2002, 56:973-982.

Zhai F, Fu D, Du S, Ge K, Chen, C, Popkin BM. What is China doing in policy-making to push back the negative aspects of the nutrition transition? Public Health Nutrition, 2002, 5(1A):273-277.

Zhang L, Conejo-Garcia JR, Yang N, Huang W, Mohamed-Hadley A, Yao W, Benencia F, Coukos G. Different Effects of Glucose Starvation on Expression and Stability of VEGF mRNA Isoforms in Murine Ovarian Cancer Cells. Biophys. Biochem. Res. Commun., 2002, 292:860-868.

Zhang L, Yang N, Conejo-Garcia JR, Mohamed-Hadley A, Benencia F, Rubin SC, Allman D, Coukos G. Generation of a Syngeneic Mouse Model to Study the Effects of Vascular Endothelial Growth Factor in Ovarian Carcinoma. American Journal of Pathology, 2002, 161:2295-309.

Zhang M, Liu P, Dwyer NK, Christenson LK, Fujimoto T, Martinez F, Comly M, Hanover JA, Blanchette-Mackie EJ, and Strauss JF III. MLN64 mediates utilization of lysosomal cholesterol by steroidogenic mitochondria. Journal of Biological Chemistry, 2002, 277:33300-33310.

Zhang Z, Sapiro R, Kapfhamer D, Bucan M, Bray J, Chennathukuzhi V, McNamara P, Curtis A, Zhang M, Blanchette-Makie EJ, Strauss III JF. A sperm associated WD repeat protein orthologous to Chlamydomonas PF20 associates with Spag6, the mammalian othologue of Chlamydomonas PF16. Molecular and Cellular Biology, 2002, 22:7993-8004.

Zhou Z-X, He B, Hall SH, Wilson EM, French FS. Domain interactions between coregulator ARA70 and the androgen receptor (AR). Molecular Endocrinology, 2002, 16:287-300.

Zuñiga V and Hernández-León R, Nuevos Destinos de la Migración de México hacia Estados Unidos. J. Garcia Vega and R. Rebolloso, eds. Monterrey: Universidad de Monterrey. Tercer Foro de Investigación UDEM, 2002.

2001

Adair LS, Guikey DKG, Bisgrove EB and Gultiano S. Effects of childbearing on women's labor force participation and earnings. Journal of Population Economics, 2001.

Adair LS, Kuzawa CW, Borja J. Maternal energy stores and diet composition during pregnancy program adolescent blood pressure. Circulation, 2001, 104:1034-1039.

Ahmed S, Lutalo T, Wawer M, Serwadda D, Sewankambo NK, Nalugoda F, Makumbi F, Wabwire-Mangen F, Kiwanuka N, Kigozi G, Kiddugavu M, Gray R. HIV incidence and sexually transmitted disease prevalence associaed with condom use: a population study in Rakai, Uganda. AIDS, 2001, 15(16):2171-9.

Alard P, Thompson C, Agersborg S, Thatte J, Setiady Y, Samy E, Tung KSK. Endogenous oocyte antigens are required for rapid induction and progression of autoimmune ovarian disease following day 3 thymectomy. Journal of Immunology, 2001, 166:4363-4369.

Appa Rao KBC, Lovely LP, Gui Y, Lininger RA, Lessey BA. Elevated endometrial androgen receptor expression in women with polycystic ovarian syndrome (PCOS). Biology of Reproduction, 2001, 66:297-304.

Apparao KBC, Murray MJ, Fritz MA, Meyer WR, Chambers AF, Truong PR, Lessey BA. Osteopontin and its receptor integrin are coexpressed in the human endometrium during the menstrual cycle but regulated differentially. Journal of Clinical Endocrinology and Metabolism, 2001, 86(10):4991-5000.

Avila JA, wong EL. When fate and husbands prevail: Dynamics of decisions and behavior regarding family planning in Cebu, Philippines. Philippine Quarterly of Culture and Society, 2001, 29:79-104.

Bagavant H, Kurth B, Tung KSK. Induction of experimental autoimmune ovarian inflammation in Cynomolgus Macaque (Macaca fascicularis). 2001.

Balbarino E, Gultiano S, Pool I, Urich P. Population and food security: Early research results from the Phillipines. Philippine Quarterly of Culture and Society, 2001, 29:38-63.

Baturin AK, Jahns LA and Popkin BM. The Nutrition Transition in the Russian Federation: a Natural Experiment in Dietary Change. Annals, 2001.

Bell C, Ge K, and Popkin BM. Weight gain and its predictors in Chinese Adults. International Journal of Obesity, 2001, 25:1079-1086.

Bilger M, Heger S, Brann DW, Paredes A, Ojeda SR. A conditional tetracycline-regulated increase in GABA production near LHRH nerve terminals disrupts estrous cyclicity in the rat. Endocrinology, 2001, (142)5:2102-2114.

Bishai D, Lin MK, Kiyonga CW. Modeling the economic benefits of an AIDS vaccine. Vaccine, 2001, 20(3-4):526-31.

Borja JB, Barba CVC. Assessing the risks associated with adolescent pregnancy in a developing world context. San Carlos Publications, Cebu City, Philippines. Philippine Quarterly of Culture and Society, 2001, 29(1/2).

Borja JR, Barba VC. Assessing the risks associated with adolescents pregnancy in a developing world context. Philippine Quarterly of Culture and Society, 2001, 29:133-47.

Brown D, Garyfallu VT, Urbanski HF. Photoperiodic modulation of GnRH mRNA in the male Syrian hamster. Molecular Brain Research, 2001, 89:119-125.

Bush LA, Herr JC, Wolkowicz M, Sherman NE, Shore A, and Flickinger CJ. A Novel Asparaginase-like protein is a sperm autoantigen in rats. Molecular Reproductive Development, 2001.

Cerrutti M and Massey DS. On the Auspices of Female Migration from Mexico to the United States. Demography, 2001, 38(2):187-200.

Chayovan N. Sexual Activity among Older Thais: The Influence of Age, Gender, and Health. Journal of Cross-Cultural Gerontology, 2001, 16:173-200.

Coonrad SA, Bolling LC, Wright PW, Visconti PE, and Herr JC. A Morpholino Phenocopy of the Mouse Mos Mutation. Genesis, 2001, 30:198-200.

Coonrod SA, Wright PW, and Herr JC. Oolemmal: Proteomics. Journal of Reproductive Immunology, 2001, 53:55-65.

Dissen GA, Romero C, Hirshfield AN, Ojeda SR. Nerve growth factor is required for early follicular development in the Mammalian Ovary. Endocrinology, 2001, (142)5:2078-2086.

Doak C, Ge K, and Popkin BM. Dietary factors of co-existing underweight and overweight members within the same household: A case study from China. Public Health Nutrition, 2001.

Du S, (ed.). Chinese People's Medical Publishing House, Beijing. Clincal Nutriology, 2001.

Du S, Lu B, Wang Z, Zhai F, Popkin BM. Transition of Dietary Pattern in China. Journal of Hygiene Research, 2001, 30(4):221-225.

Du S, Lu B, Zhai F, and Popkin BM. The Nutrition Transition in China: a new stage of the Chinese diet. Public Health Nutrition, 2001.

Du S, Zhai F, and Ge K. Distribution of Body Mass Index in Chinese Adults, aged 20-60 years. Journal of Hygiene Research, 2001, 30(6):339-342.

Ferro VA, Khan MAH, Latimer VS, Brown D, Urbanski HF and Stimson WH. Immunoneutralisation of GnRH-I, without cross-reactivity to GnRH-II, in the development of a highly specific anti-fertility vaccine for clinical and veterinary use. Reproductive Immunology, 2001, 51:109-129.

Friedman J, Goodkind D, Cuong BT, Anh TS. Work and Retirement among the Elderly in Vietnam. PSC Research Report, 2001, 209-232.

Gendreau F, Tabutin D. Multivariate approach to analyze primary and secondary infertility, Applications to Cameroon. African Population Studies, 2001, 16(1).

Gray RH, Wabwire-Mangen F, Kigozi G, Sewankambo NK, Serwadda D, Moulton LH et al. Randomized trial of presumptive sexually transmitted disease therapy during pregnancy in Rakai, Uganda. American Journal of Obstetrics and Gynecology, 2001, 185(5):1209-17.

Gray RH, Wawer MJ, Brookmeyer R, Sewankambo NK, Serwadda D, Wabwire-Mangen F, Lutalo T, Li X, VanCott T, Quinn TC, Probability of HIV-1 transmission per coital act in monogamous, heterosexual, HIV-1 discordant couples in Rakai, Uganda. Lancet, 2001, 57(9263):1149-53.

Gregory CW, He B, Johnson RT, Ford OH, Mohler JL, French FS, Wilson EM. A mechanism for androgen receptor mediated prostate cancer recurrence after androgen deprivation therapy. Cancer Research, 2001, 61:4315-4319.

Gregory CW, He B, Wilson EM. The putative androgen receptor-A form results from in vitro proteolysis. Journal of Molecular Endocrinology, 2001, 27:309-319.

He B, Bowen NT, Minges JT, Wilson EM. Androgen-induced NH2-and COOH-terminal interaction inhibits p160 coactivator recruitment by activation function 2. Journal of Biological Chemistry, 2001, 276:42293-42301.

Henderson GE, Entwisle B, Ying L, Mingliang Y, Siyuan X, and Zhai F. Redrawing the Boundaries of Work: Views on the Meaning of Work (Gongzuo). In: Re-Drawring Boundaries: Work, Households and Gender in China. Entwisle B and Henderson GE (eds.). Berkeley. University of California Press, 2001.

Im-Em W. Older People and AIDS: Quantitative Evidence of the Impact in Thailand. Social Evidence & Medicine. Social Science and Medicine, 2001, 52:1313-1327.

Jethanandani P, and Goldberg E. Ldhc Expression in Non-Germ Cell Nuclei is Repressed by NF-1 Binding. Journal of Biological Chemistry, 2001, 276:35414-35421.

Kespichayawattana J, Aungsuroch Y. A Study of Psychological Well-being of Thai Elderly. Thai Journal of Nursing, 2001, 50(2):132-142.

Kozyreva P, Gerasimova S, Kiseleva I, Nizamova A. The dynamics of social well being of the Russians. In Russia. The Transforming Society, 2001, 243-256.

Kroft TL, Jethanandani P, McLean DJ, and Goldberg E. Methylation of CpG Dinucleotides Alters Binding and Silences Testis-Specific Transcription Directed by the Mouse Lactate Dehydrogenase C Promoter. Biology of Reproduction, 2001, 65:1522-1527.

Leticia Marteleto. Brazil and the South Cone in The Encyclopedia of American Immigration. New York: M. E. Sharpe. Encyclopedia of American Immigration, 2001.

Li P, Chan HC, He B, So SC, Chung YW, Shang Q, Zhang YD, Zhang YL. An antimicrobial peptide gene found in the male reproductive system of rats. Science, 2001, 291:1783-1875.

Liu Q, Hamil KG, Sivashanmugam P, Grossman G, Soundararajan R, Rao AJ, Richardson RT, Zhang YL, O'Rand MG, Petrusz P, French FS, Hall SH. Primate epididymis-specific proteins: characterization of ESC42, a novel protein containing a trefoil-like motif in monkey and human. Endocrinology, 2001, 142:4529-4539.

Lou YH, Ang J, Southwood S, Sette A, Bagavant H, Tung KSK. Specificity of antibody response elicited by chimeric peptides and molecular basis for the promiscuous response, 2001.

Magaly Sanchez R and Others, Violences Urbaines. Alliance pour un monde responsible, pluriel et solidaie. Chahier de propositions pour le XXI Siecle. FPH. CPP 48 Paris, France. Coordonne par Yves Pedrazzini, 2001.

Marteleto L. Las Abuelas como Provedoras de cuidado infantil en Brasil (Grandmothers as child care providers in Brazil). In Conceiço, Maria Cristina (Ed.) Processos Sociales, Población Y Vida Domestica: Alternativas teóricas y empiricas en las investigationes sobre la familia. Facultad Latinoamericana de Ciencias Sociales, Mexico (with Mary Noonan). 2001.

Massey D and Durand J. Borderline Sanity. American Prospect, 2001.

Mbamaonyeukwu C. Aging of Africa's Populations. Quarterly Journal of the International Institute on Aging, 2001, 11(4):2-7.

Mbamaonyeukwu C. Nigeria's Aging Population: A Call for Attention. Quarterly Journal of the International Institute on Aging, 2001, 12(1):15-24.

Naaby-Hansen S, Wolkowicz MJ, Klotz K, Bush LA, Westbrook VA, Shibahara H, Shetty J, Coonrod SA, Reddi PP, Shannon J, Kinter M, Sherman N, Fox J, Flickinger CJ, and Herr JC. Co-localization of the inositol 1,4,5-trisphosphate receptor and calreticulin in the equatorial segment and in membrane bounded vesicles in the cytoplasmic droplet of human spermatozoa. Molecular Human Reproduction, 2001, 7(10):923-933.

Norton EJ, Diekman AB, Westbrook VA, Flickinger CJ, and Herr JC. RASA: An antisperm ScFv directed against the human sperm surface: Implications for novel contraceptives. Human Reproduction, 2001, 16(9):1854-1860.

Nyblade LC, Menken J, Wawer MJ, Sewankambo NK, Serwadda D, Makumbi F et al. Population-based HIV testing and counseling in rural Uganda: participation and risk characteristics. Journal of Acquired Immune Deficiency Syndrome, 2001, 28(5):463-70.

Popkin BM, Lu B and Zhai F. Understanding the nutrition transition: Measuring rapid dietary changes in transitional countries public health nutrition. Public Health Nutrition, 2001.

Popkin BM, Lu B, Guo X. Rapid economic change, the nutrition transition and its effects of the structure of consumption: the China case. Journal of Crop Production, 2001.

Reddi PP, Shore AN, Acharya KK, and Herr JC. Transcriptional Regulation of Spermiogenesis: Insights from the Study of the Gene encoding the Acrosomal Protein SP-10. Journal of Reproductive Immunology, 2001, 53:25-36.

Richard RT, Sivashanmugam P, Hall SH, Hamil KG, Ruben SM, French FS, O'Rand MG. Cloning and sequencing of human Eppin, a novel family of protease inhibitors expressed in the human epididymis and testis. Gene, 2001, 270:93-102.

Saengtienchai C, Kespichayawattana J, Aungsuroch Y, and Ingersoll-Dayton B. The relationship between familial support and psychological well-being among Thai elderly. Journal of Demography, 2001, 17(2):1-18.

Sapiro R, Murray JM, Zhang M, Blanchette-Mackie EJ, Strauss III JF. Sperm antigen 6 (Spag 6), a novel protein binds to microtubules, induces bunding and increases stability. Meeting of the Society for the Study of Reproduction. Ontario. Meeting of the Society for the Study of Reproduction, 2001.

Shetty J, Diekman A, Jayes F, Sherman N, Naaby-Hansen S, and Herr JC. Differential extraction and enrichment of human sperm surface proteins in a 2-D proteome: identification of immunocontraceptive candidates. Electrophoresis, 2001, 22:3053-3066.

Short SE, Zhai F, Xu S and Yang M. China's one-child policy and the care of children: An analysis of qualitative and quantitative data. Social Forces, 2001, 79(3):913-943.

Stouffer RL, Martinez-Chequer JC, Molskness TA, Xu F, Hazzard TM. Regulation and action of angiogenic factors in the primate ovary. Arch Med Res, 2001, 32:567-575.

Thompson C, Bagavant H, Setiady Y, Ohno K, Tung KSK. Day 3 thymectomy ameliorates lupus lomerulonephritis and induces organ specific autoimmune disease in (SWRxNZB)F1 mice, 2001.

Turner RMO, Musse M, Mandal A, Klotz K, Jayes F, and Herr JC, Gerton GL, Moss ST, and Chemes HE. Molecular genetic analysis of two human sperm fibrous sheath proteins, AKAP4 and AKAP3, in men with dysplasia of the fibrous sheath. Journal of Andrology, 2001, 22(2):302-315.

Visconti PE, Hao Z, Purdon M, Stein P, Balsara BR, Testa JR, Herr JC, Moss S, and Kopf GS. Cloning and chromosomal localization of a novel serine/threonine kinase belonging to the subfamily of testis -specific kinases. Genomics, 2001, 77:163-170.

Wang Y. Cross-National Comparison of Childhood Obesity: The Epidemic and the Relationships Between Obesity and Socioeconomic status. International Journal of Epidemiology, 2001, 30:1129-1136.

Wang Y, and Adair LS. How does maturity adjustment influence the estimates of obesity prevalence in adolescents from different populations using an international reference. International Journal of Obesity, 2001, 25:550-558.

Wang Y, Monteiro C, Popkin BM. Trends in Obesity and Underweight in Older Children and Adolescents in the United States, Brazil, China and Russia. American Journal of Clinical Nutrition, 2001, In Press.

Westbrook VA, Diekman AB, Naaby-Hansen S, Klotz KL, Norton EJ, Flickinger CJ, and Herr JC. Localization of the SPAN-X protein, a cancer/testis marker, to nuclear vaculoles and redundant nuclear envelope of human spermatozoa. Biology of Reproduction, 2001, 64:345-358.

Wolkowicz MJ, Naaby-Hansen S, Gamble AR, Reddi PP, Flickinger CJ, and Herr JC. Tektin B1 Demonstrates Flagellar Localization in Human Sperm. Biology of Reproduction, 2001, 66:241-250.

Yang GY, Gregory CW, Shang Q, O'Brien DA, Zhang YL. Differential expression of CCAAT/enhancer-binding protein in rat androgen-dependent tissues and human prostate cancer. Journal of Andrology, 2001, 22:471-480.

Zhai F, Lu B, Nutrition Survey and Surveillance. In Du S (ed.). Clinical Nutriology, Chinese People's Medical Publishing House, Beijing. Clinical Nutriology, 2001.

2000

Bawah A. Husband-Wife Communication and Subsequent Fertility Planning Behavior: a Longitudinal Assessment from the Navrongo Panel Study System. Population Association of America Annual Meeting, 2000.

Bawah A and Zuberi T. Using Own-Child Procedures to Estimate Childhood Mortality: The Case of Zambia. Population Association of America Annual Meeting, 2000.

Brahmbhatt H, Bigg D. Strathdee SA, Characteristics and utilization patterns of needle exchange attendees in Chicago: 1994-1998. Journal of Urban Health, 2000, 77:346-358.

Conn PM, Maya-Nunez G, Janovick JA, Cornea A. Gonadotropin releasing hormone receptor trafficking. In:Proceedings of the HypoCCS Symposium and Investigators Meeting, Melmed S. Elsevier Press, 2000.

Cornea A, Janovick JA, Maya-Nunez G, Conn PM. Gonadotropin releasing hormone receptor microaggregation: rate monitored by flourescence resonance energy transfer. Biological Chemistry, 2000, (276)3:2153-2158.

Diaz-Cueto L, Stein P, Jacobs A, Schultz RM, and Gerton GL. Modulation of mouse preimplantation embryo development by acrogranin (epithelin/granulin precursor). Developmental Biology, 2000, 217:406-418.

Diekman AB, Norton EJ, Westbrook-Case VA, Klotz KL, Naaby-Hansen S, and Herr JC. Anti-sperm antibodies from infertile patients and their cognate sperm antigents: identity between SAGA-1, the H6-3C4 antigen, and CDW52. American Journal of Reproductive Immunology, 2000, 43:134-143.

Du S, Zhai F, Wang Y, Popkin BM. Current methods for estimating dietary iron bioavailability do not work in China. Journal of Nutrition, 2000, 130:193-98.

Entwisle B, Short S, Fengying Z, Ma L. Household Economies in Transitional Times. In Barbara Entwisle and Gail Henderson (eds.), Redrawing Boundaries: Work, Households and Gender in China. University of California Press, 2000.

Flickinger CJ, Rao J, Bush LA, Sherman NE, Oko RJ, and Herr JC. Outer dense fiber proteins are dominant post-obstruction autoantigens in adult Lewis rats. Biology of Reproduction, 2000, 64:1451-1459.

Gendreau F, Tabutin D. La femme camerounaise face aux méthodes contraceptives modernes: rejet ou inaccessibilité? (co-author with M. Wayack), in Pilon and Guillaume (eds.), Maitrise de la fécondité et planification familiale au Sud Paris. Editions IRD, 2000, 177-191.

Guo X, Mroz TA, Popkin BM and Zhai F. Structural changes in the impact of income on food consumption in China, 1989-93. Economic Development & Cultural Change, 2000, 48:737-760.

He B, Kemppainen JA, Wilson EM. FXXLF and WXXLF sequences mediate the NH2-terminal interaction with the ligand binding domain of the androgen receptor. Journal of Biological Chemistry, 2000, 275:22986-22994.

Hernández-León R and Z?ñiga V. The Opening of New Frontiers for Latino Migration in the United States: The Case of Dalton, Georgia. Annual Meeting of the American Sociological Association, 2000.

Illera MJ, Cullinan E, Gui Y, Yuan L, Beyler SA, Lessey BA. Blockade of the integrin adversely affects implantation in the mouse. Biology Reproduction, 2000, 62:1285-1290.

Jones S. Characteristics and Determinants of Female Migration in Southern Africa. Population Association of America Annual Meeting, 2000.

Kubli-Garfias K, Conn PM. Electronic structure of gonadotropin releasing hormone (GnRH): A semiempirical study. Journal of Molecular Structure: THEOCHEM, 2000, 529(1-3):203-208.

Lovely LP, Appa-Rao KBC, Gui YT, Lessey BA. Characterization of androgen receptors in a well-differentiated endometrial adenocarcinoma cell line (Ishikawa). J Steroid Biochem Mol Biol, 2000, 74:235-241.

Maya-Nunez G, Janovick JA, Conn PM. Combined modification of intracellular and extracellular loci on the human GnRH receptor: provides a mechanism for enhanced expression. Endocrinology, 2000, (13)3:401-409.

Moreno RD, Ramalho-Santos J, Chan EK, Wessel GM, Schatten G. The Golgi apparatus segregates from the lysosomal/acrosomal vesicle during rhesus spermiogenesis: structural alterations. Developmental Biology, 2000, 219(2):334-49.

Navarrete T, Johnson A, Mixon B, Wolf D. The relationship between fertility potential measurements on cryobanked semen and fecundity of sperm donors. Human Reproduction, 2000, 15(2):344-350.

Noumbissi A. Where the Man Loses His Power in Africa: The Fertility Strategies of Women in Cameroon. Population Association of America Annual Meeting, 2000.

Noumbissi A and Bawah A. Estimating the Covariates of Childhood Mortality from Census: An Application to Kenya and Zambia Data. Population Association of America Annual Meeting, 2000.

Resko JA, Pereyra-Martinez AC, Stadelman HL, Roselli CE. Cellular observations and hormonal correlates of feedback control of luteinizing hormone secretion by testosterone in long-term castrated male rhesus monkeys. Biology of Reproduction, 2000, 63:872-878.

Resko JA, Pereyra-Martinez AC, Stadelman HL, Roselli CE. Region-specific regulation of Cytochrome P450 Aromatase Messanger Ribonucleic Acid by Androgen in Brains of Male Rhesus Monkeys. Biology of Reproduction, 2000, 62:1818-1822.

Rutaremwa G. Mother's characteristics and Child Survival Birth in Uganda. Population Association of America Annual Meeting, 2000.

Santiphop T. The relevant population dynamics to land degradation in the northeast region. Journal of Population and Social Studies, 2000, 8:67-89.

Sapiro R, Tarantino LM, Velazquez F, Kiriakidou M, Hecht NB, Bucan M, Strauss III JF. Sperm antigen 6 is the murine homologue of the Chlamydomonas rheinhardtii central apparatus protein encoded by the PF16 locus. Biology of Reproduction, 2000, 62:511-518.

Sewankambo NK, Gray RH, Ahmad S, Serwadda D, Wabwire-Mangen F, Nalugoda F, Kiwanuka N, Lutalo T, Kigozi G, Li C, Meehan MP, Brahmbhatt H, Wawer MJ. Mortality Associated with HIV Infection in Rural Rakai District, Uganda. AIDS, 2000, 14(15):2391-2400.

Shivakoti G, Chhetri N, Population Forces and Environmental Change: Observations from Western Chitwan, Nepal. Society and Natural Resources, 2000, 13:763-775.

Sibanda A. Ethnicity, Socio-Economic Status and Age at First Birth in South Africa: Does Social Origin and Group Heterogeneity Matter. Population Association of America Annual Meeting, 2000.

Sibanda A and Zulu E. Changes in Household Structure in South Africa: A Comparison of the Apartheid and Post-Apartheid Eras. Population Association of America Annual Meeting, 2000.

Sibanda A, and Zuberi T. Age at first birth in South Africa: Does social origin and group heterogeneity matter. Population Association of America Annual Meeting, 2000.

Stein P, and Schultz RM. Initiation of a chromatin-based transcriptionally repressive state in the preimplantation mouse embryo: Lack of a primary role for expression of somatic histone H1. Molecular Reproductive Development, 2000, 55:241-248.

Stookey JD, Wang Y, Ge K, Lin H, & Popkin BM. Measuring Diet Quality in China. The INFH-UNC-CH Diet Quality Index European Journal of Clinical Nutrition, 2000, 54:811-821.

Stookey JD, Zhai F, Zohoori N and Popkin BM. Nutrition of Elderly People in China. Asia Pacific Journal of Clinical Nutrition, 2000, 9(4):243-251.

Timossi CM, Tomassi B, Gonzarez R, Arranz C, Conn PM, Ulloa-Aguirre A. Differential effects of the charge variants of human follicle-stimulating hormone. Endocrinology, 2000, (165):193-205.

Ulloa-Aguirre A, Conn PM. G protein-coupled receptors and G proteins. In: Principles of Molecular Regulation. Human Press, Totowa NJ, 2000, 3-25.

Wang Y, Ge K and Popkin BM. Tracking of Body Composition from Childhood to Adolescense: A Six-Year Follow-up Study in China. American Journal of Clinical Nutrition, 2000, 72:1018-1024.

Westbrook VA, Diekman AB, Naaby-Hansen S, Klotz KL, Khole VV, von Kap-Herr C, Golden WL, Eddy RL, Shows TB, Stoler MH, Flickinger CJ, and Herr JC. Spermatid-specific expression of the novel X-linked gene product SPAN-X located to the nucleus of human spermatozoa. Biology of Reproduction, 2000, 63:469-481.

Zhai F, Wang H and Du S. Overweight and Obesity Status and Cause of Formation in Chinese Women. Food and Nutrition Bulletin, 2000, 3:5-7.

Zimmer Z, Amornsirisomboon P. Socioeconomic Status and Health Among Older Adults in Thailand: An Examination Using Multiple Indicators. National Statistical Office, 2000.

1999

Acharya KK, Reddi PP, and Herr JC. Dissection of the SP-10 Promoter and Identification of Testis-Specific DNA-Protein Interactions. Biology of Reproduction, 1999, 60(supp 1):212.

Adetunji J, and Das Gupta M. Women and Mortality Trends. In Encyclopedia Amson Sibanda. The Kenyan Fertility Transition: An Age-Parity Specific Analysis of Fertility Levels and Trends. Genus, 1999, LV:3-4.

Anderson B, Kim CS, Romani JH, Traphagan JW, and Liu J. Living Arrangements and Mortality Risks of the Urban Elderly in Yunnan Province, China 1995. PSC Research Report, 1999, 99-435.

Axinn WG, Pearce LD, and Ghimire DJ. Innovations in Life History Calendar Applications. Social Science Research, 1999.

Bagavant H, Adams S, Terranova P, Chang AY, Kramer FW, Lou YH, Kasai K, Tung KSK. Autoimmune ovarian inflammation triggered by proinflammatory (TH1) T cells is compatible with normal ovarian functional. Biology of Reproduction, 1999, 61:635-642.

Barber JS, Pearce LD, Indra Chaudary and Susan Gurung. The Impact of Participation in Women's Groups, Youth Groups, and Credit Groups on Family Formation. Working Paper. Population Studies Center, 1999.

Bawah AA, Akweongo P, Simmons R, and Phillips JF. Women's Fears and Men's Anxieties: The Impact of Family Planning on Gender Relations in Northern Ghana. Studies in Family Planning, 1999, 30(1):54-66.

Boonlert L and Sawangdee Y. A Textbook for Sub-district Administrative Organization Representatives. IPSR Mahidol University, 1999.

Borja JB. Children having children: adverse consequences on infant growth. Presented at the University of San Carlos Graduate School Research Forum. , 1999.

Caba M, Spies HG, Pau KYF. Coitus-induced c-fos mRNA expression in the rabbit brain. Biology of Reproduction, 1999, (Supp 1)60:182.

Chamratrithirong A, Prasartkul P, Punpuing S, Boonchalaksi W and Santhiphop T. The study of population-consumption-environment link: the case of air pollution in Bangkok. IPSR Mahidol University, 1999, 91.

Coonrod S, Naaby-Hansen S, Shetty J, and Herr J. Characterization of a PI-PLC-sensitive oolemma protein mediating human sperm-hamster egg binding and fusion Molecular. Human Reproduction, 1999, 1027-1033.

Coonrod SA, Naaby-Hansen S, Shetty J, Shibahara H, Chen M, Bigler D, White JM, and Herr JC. Treatment of Mouse Occytes with PI-PLC Releases 70 kDa (pl 5) and 35-45 kDa (pl5.5). Protein Clusters from the Egg Surface and Inhibits Sperm-Oolemma Binding and Fusion. Developmental Biology, 1999, 207:334-349.

Cuong BT, Anh ST, Goodkind D, Knodel J, Friedman J. Vietnamese Elderly Amidst Transformations in Social Welfare Policy in David Phillips (ed.) Aging in the Asia-Pacific Regions: Issues and Policies. London: Routledge. PSC Research Report, 1999, 99-436.

De Jong GF, Chamratrithirong A, and Tran QG. For better, for worse: life satisfaction consequences of migration. Population Research Institute Working Paper. Pennsylvania State University. IPSR Mahidol University, 1999, 99-07.

Devoto L, Christenson LK, McAllister JM, Makrigiannakis A, Strauss III JF. Insulin and insulin-like growth factor - 1 and II modulate human granulosa-lutein cell steroidogenesis: enhancement of steroidogenic acute regulatory protein (StAR) expression. Molecular Human Reproduction, 1999, 5:1003-1010.

Diekman AB, Norton EJ, Klotz KL, Westbrook VA, Shibahara H, Naaby-Hansen S, Flickinger CJ, and John C Herr. Evidence for a Unique N-linked Glycan associated with Human Infertility on Sperm CD52: A Candidate Contraceptive Vaccinogen. Immunology Review, 1999, 171:203-212.

Du S. Growth and development of children and adolescents aged 0-18 y in China. In Dietary and physical status of Chinese population in the 1990s. Ge K (ed.) Beijing. People's Medical Publishing House, 1999.

Flickinger CJ, Bush LA, Williams MV, Naaby-Hansen S, Howards SS, and Herr JC. Post-Obstruction Rat sperm autoantigens identified by two dimensional gel electrophoresis and western blotting. Journal of Reproductive Immunology, 1999, 43:35-53.

Ganesh S, Axinn W, Bhandara P, and Chhetri N. The Impact of Community Context on Land Use in an Agricultural Society. Population and Environment, 1999, 20:191-213.

Ge K, Chang S. Food and nutrition of Chinese residents. In Wang Wenzhe (ed.) Fifty years of Food Industry in China. China Encyclopedia Publishing House, 1999, 311-314.

Ge K, Chang S. Dietary intake of micronutrients of Chinese inhabitants. Acta Nutrimenta Sinica, 1999, 21:1-7.

Goldberg E, and Herr JC. LDH-C4 As a Contraceptive Vaccine. In: Reproductive Immunology, SK Gupta, ed. Narosa Pub. House, New Delhi, India. Proceedings Int. Congress Reprod. Immunology, 1999, 309-315.

Gui YT, Zhang J, Yuan L, Lessey BA. Regulation of Hoxa -10 and its expression in normal and abnormal endometrium. Molecular Human Reproduction, 1999, 5:866-873.

Guitiano S. Husbands' views on family planning and labor force participation of wives in Metro Cebu, the Phillipines. Philippine Quarterly of Culture and Society, 1999, 27(3-4):133-160.

Guo X, Popkin BM and Zhai F. Patterns of Change in Food Consumption and dietary Fat Intake in Chinese Adults, 1989 - 1993. Food and Nutrition Bulletin, 1999, 20(3):344-353.

Guo X, Popkin BM, Mroz TA, and Zhai F. Food Price Policy Can Favorably Alter Macronutrient Intake in China. Journal of Nutrition, 1999, 129:994-1001.

Hai L. Computation of nutrient composition of representative food groups. In: Collection of papers on the Dietary Guidelines for Chinese Population. Collection of Papers, 1999.

Hai L, Zhai F, and Ge K. The distribution of BMI in elderly Chinese population. Acta Nutrimenta Sinica, 1999, 137-142.

Hamil KG, Sivashanmugam P, Richardson RT, Grossman GH, Ruben SM, Mohler JA, Petrusz P, O'Rand MG, French FS, Hall SH. HE2 and HE2, new members of an epididymis-specific family of androgen-regulated proteins in the human. Endocrinology, 1999, 141:1245-1253.

He B, Kemppainen JA, Voegel JJ, Gronemeyer H, Wilson EM. Activation function 2 in the human androgen receptor ligand binding domain mediates interdomain communication with the NH2-terminal domain. Journal of Biological Chemistry, 1999, 274:37219-37225.

Hernández-León R. Inter-Metropolitan Migration from Mexico to the U.S.: Labor Markets and Networks in the Monterrey-Houston Circuit. XXII International Congress of the Latin American Studies Association, 1999.

Herr JC, Howards SS, Bush LA, Thomas D, Coonrod Scott, Khole V, and Flickinger CJ. Sperm Mitochondria Associated Cysteine-rich Protein (SMCP) is a Dominant Sperm Autoantigen in Lewis Rats. Biology of Reproduction, 1999.

Herr JC, Klotz KL, Anderson P, Adams E, Moore N, and Howards S. Progress in developing an immunochromatographic device for sperm detection. Clinical Immunology Newsletter, 1999, 19(4/5):52-58.

Herrero MB, de Lamirande E, Gagnon C. Nitric Oxide regulates human sperm capacitation and protein-tyrosine phosphorylation in vitro. Biology of Reproduction, 1999, 61:575.

Isarabhakdi P. Factors associated with sexual behavior and attitudes of never-married rural Thai youth. Journal of Population and Social Studies, 1999, 8(1).

Jampaklay A. Care and protection of children among Thai Muslim families. IPSR Mahidol University, 1999, 63.

Kanchanachitra C. Reducing Girls Vulnerability to HIV/AIDS: The Thai Approach. UNAIDS Case Study. UNAIDS Publication Geneva, Switzerland, 1999.

Knodel J, Chayovan N, Graiurapong S, and Suraratdecha Chutima. Aging in Thailand: An Overview of Formal and Informal Support," in David Phillips (ed.) Aging in the Asia Pacific Regions: Issues and Policies, London: Routledge. Also issued as Elderly in Asia Research Report, Population Studies Center. PSC Research Report 1999 University of Michigan 99-53. UNAIDS Publication Geneva, Switzerland, 1999.

Knodel J, Gray RS, Sriwatcharin P, Peracca S. Religion and Reproduction: Muslims in Buddhist Thailand. Population Studies, 1999, 53(2).

Liao M, Zhou ZX, Wilson EM. Redox-dependent DNA binding of the purified androgen receptor evidence for disulfide linked androgen receptor dimers. Biochemistry, 1999, 38:9718-9727.

Lu B, Zhai F, Jin S, and Ge K. The impact of maternal occupation on the dietary and nutritional status of preschool children: A case study in 8 provinces of China. Journal of Hygiene Research, 1999, 28(1):4-47.

Lu B, Zhai F, Jin S, Ge K. The Impact of Maternal Occupation on the Dietary and Nutritional Status of Preschool Children: A Case Study in 8 Provinces of China. Journal of Hygiene Research, 1999, 28(1):44-47.

Mandal A, Naaby-Hansen S, Wolkowicz MJ, Klotz K, Shetty J, Retief JD, Coonrod SA. FSP95, a testis specific auto-and iso-antigenic 95 kDa fibrous sheath protein, undergoes tyrosine phosphorylation during human sperm capacitation. Biology Reproduction, 1999, 61:1184-1197.

Massey DS and Zenteno R. The Dynamics of Mass Migration. Proceedings of the National Academy of Sciences, 1999, 96:5328-35.

Massey DS, and Zenteno R. Especifidad versus Representatividad: Enfoques Metodologicos par el Estudio de la Migracion Internacional. Estudios Demograficos y Urbanos, 1999, 40:75-116.

Maya-Nunez G, Conn PM. Transcriptional Regulation of the Gonadotropin-Releasing Hormone (GnRH) Receptor Gene is Mediated in Part by a Putative Repressor Element and by the Cyclic AMP Response Element. Endocrinology, 1999, 140:3452-3458.

Ngom P, Akweongo P, Adongo P, Bawah AA, and Binka F. Maternal Mortality in the Kasena-Nankana District of Northern Ghana. Studies in Family Planning, 1999, 30(2):142-147.

Ngom P, Sarr I, and Gaye A. Ethnic diversity and assimilation in Senegal: Evidence from the 1988 Census. Third African Population Conference. The African Population in the 21st Century, 1999.

Noumbissi A. Données et méthodes pour l'analyse de la mortalité des adultes en Afrique: les acquis et les nouveaux défis, in The African Population in the 21st Century. UAPS-NPU, 1999, 2:397-411.

Noumbissi A, and Sanderson JP. La communication entre conjoints sur la planfication familiale au Cameroun: Les normes et les stratégies du couple en matière de fécondité. Population, 1999, 131-144.

Ofstedal MB, Knodel J, Chayovan N. Intergenerational Support and Gender: A Comparison of Four Asian Contries. (Also presented at the Annual Meeting of the Population Association of America, New York, May 1999.). Southeast Asian Journal of Social Science, 1999, 27(2):21-42.

Ojeda Sr, Dissen GA and Romero C. Role of neurotrophic factors in the control of ovarian development. In: Frontiers in Endocrinology, Vol. 21, Ovarian Function Research: Present and Future. Fugimoto S, Adashi EY, Hsueh AJW, Strauss III, JF (eds). Serono Symposia publications, Rome Italy, 1999, 171-178.

Ojeda SR, Romero C, Tapia V and Dissen GA. Neurotropic and cell-cell dependent control of early follicular development. Proc Ares-Serono Workshop on Early Folliculogenesis & Oocyte Formation Development & Arrest: Basic & Clinical Aspects. , 1999.

Osheroff JE, Visconti PE, Valenzuela JP, Travis AJ, Alvarez JA, and Kopf GS. Regulation of human sperm capacitation by a cholesterol effux-stimulated signal transduction pathway leading to protein kinase A-mediated up-regulation of protein tyrosine phosphorylation. Molecular Human Reproduction, 1999, 5:1017-1026.

Paeratakul S, Adair LS, Zhai F, Ge K, & Popkin BM. Sex difference in measure of body fatness and the possible difference in the effect of dietary fat on body fatness in men and women. European Journal of Clinical Nutrition, 1999, 53:865-871.

Prasartkul P, and Isarabhakdi P. Factors affecting the migration of rural villagers in Buri-rum Province. Institute for Population and Social Research. IPSR Mahidol University, 1999, 245.

Reddi PP, Kallio M, and Herr JC. Green Flourescent Protein as a Reporter for Promoter Analysis of Testis-Specific Genes in Transgenic Mice. Methods in Enzymology, 1999, 302:272-284.

Roberts AK, Monzon-Bordonaba F, Van Deerlin PG, Holder J, Macones GA, Morgan MA, Strauss JP, Parry S. Association of polymorphism within the promoter of tumor necrosis factor alpha gene with increased risk of preterm premature rupture of the fetal membranes. American Journal of Obstetrics and Gynecology, 1999, 180:1297-1302.

Rutaremwa G. Regional Differences in Infant and Child Mortality: A comparative study of Kenya and Uganda, in The African Population in the 21st Century. UAPS-NPU, 1999, 2:311-328.

Schultz RM, Davis Jr., W, Stein P, and Svoboda P. Reprogramming of gene expression during preimplantation development. Journal of Experimental Zoology, 1999, 285:276-282.

Sethaput C. Ethical Issues in Social Science Research. Journal of Population and Social Studies, 1999, 7(2).

Sethaput C and Isarabhakdi P. Information provided by rural mothers to their daughters concerning reproductive health. In L. King (ed.) Questions of Intimacy Rethinking Population Education. UNESCO Institute for Education Hamburg, Germany, 1999.

Shetty J, Naaby-Hansen S, Shibahara H, Bronson R, Flickinger C, and Herr JC. Identification of immunodominant sperm antigens recognized by infertile men and women's sera containing antisperm antibodies using a 2-D Proteome. Biology of Reproduction, 1999, 61:61-69.

Shibahara H, Wakimotol E, Haaby-Hansen S, Shetty J, Herr JC and Koyama K. Identification of major immunodominant human sperm antigens recognized by sera from infertile women with sperm-immobilizing antibodies (Si-Abs) using two-dimensional (2-D) gel electrophoresis. Biology of Reproduction, 1999, 60(supp)1:257.

Sibanda A and Zuberi T. Contemporary fertility levels and trends in South Africa: Evidence from reconstructed census birth histories. In The African Population in the 21st Century. UAPS-NPU, 1999, 1:79-108.

Sivashanmugam P, Richardson RT, Hall S, Hamil KG, French FS, O'Rand MG. Cloning and characterization of an androgen-dependent acidic epididymal glycoprotein/CRISP-1-like protein from the monkey. Journal of Andrology, 1999, 29:384-393.

Strauss III JF, Kallen CB, Christenson LK, Watari H, Devoto L, Arakane F, Kiriakidou M, and Sugawara T. The steroidogenic acute regulatory protein (StAR): A window into the complexities of intracellular cholesterol trafficking. Recent Progress in Hormone Research, 1999, 54:369-395.

Sutovsky P, Moreno R, Ramalho-Santos J, and Schatten G. Ubiquitin Tag for Sperm Mitochondria. Nature, 1999, 402, 371-372.

Sutovsky P, Ramalho-Santos J, Moreno R, Oko R, Hewitson L, and Schatten G. On-stage Selection of Single Round Spermatids using a Vital, Mitochondrion-specific Flourescent Probe Mito Tractker and High Resolution Differential Interference Contrast Microscopy. Human Reproduction, 1999, 14(9):2301-12.

Thongthai V. Statistics and Human Development Panel discussion at the Symposium on Statistics and Human Development organised by Statistics Department, Faculty of Science, Chiangmai University, Thai Statistical Association, and Thai Population Association, Chiangmai. Symposium on Statistics and Human Development, 1999, 25:5-11.

Thongthai V. Continuation and failure rates: indicators of family planning services. Journal of Population and Social Studies, 1999, 7(2):71-92.

Thongthai V. Fertility transition. In Boonlert Leoprapai (ed.) Thai Population in King Rama IX. IPSR Mahidol University, 1999, 31-40.

Tung KSK, Agersborg SS, Bagavant H, Garza KM, Wei K. Autoimmune ovarian disease induced by immunization with ZP3 peptide (Unit 15.17). Eds. Coligan JE, Kruisbeek AM, Marguiles HH, Shevach EM, Strober W, John Wiley & Sons, Inc., New York, NY. Current Protocols in Immunology, 1999, In Preess.

Visconti PE, Galantino-Homer H, Jorgez CJ, Ning XP, Moore GD, Valenzuela JP, Alvarez J, and Kopf GS. Cholesterol efflux-mediated signal transduction in mammalian sperm: cyclodextrins initiate transmembrane signaling leading to an increase in protein tyrosine phosphorylation and capacitation. Journal of Biological Chemistry, 1999, 274:3235-3242.

Yoddumnern-Attib B, Attig GA, Santiphop T, Rojnkureesatien K, and Vorasiri-amorn Y. Population dynamics and community forestry in Thailand: Understanding and incorporating population issues into forestry development plans and programs. IPSR Mahidol University, 1999, 55.

Yu W, Zhao L, Jie L, Ge K. Milk drinking habit intervention in Children. China School Hygiene, 1999, 20:245-246.

1998

Adetunji J, and Das GM. Women and Mortality Trends. In Encyclopedia of Women in the Third World, edited by Stromquist. Garland Publishers, New York. Enclycopedia of Women in the Third World, 1998.

Anh TS, Knodel J, Lam D, and Friedman J. Family size and children's education in Vietnam. Demography, 1998, 35(1):57-70.

Chamratritihrong A. The need for another revolution after the reproductive revolution in Thailand. Journal of Population and Social Studies, 1998, 7:1-20.

Chen MS, Coonrod SA, Takahashi Y, Yamashita Y, Kincade PW, Tung KS, Herr JC, and White JM. Role of the integrin-associated protein CD9 in sperm-egg binding and fusion. Molecular and Cellular Biology, 1998, 9:295a.

Coonrod SA, Naaby-Hansen S, Shetty J, Shibahara H, and Herr JC. Treatment of zona-free hamster occytes with PI-PLC blocks human sperm-hamster egg interation and releases a protein cluster (33-43 kDa, PI 4.3-5.5) from the hamster oolemma. Biology of Reproduction, 1998, 58(supp)1:157.

Coonrod SA, Naaby-Hansen S, Shetty J, Shibahara H, Chen M, Bigler D, White JM and Herr JC. PI-PLC releases protein clusters (70 kDa, pl 5;35-45 kDa, pl 5.5) from the mouse oolemma and blocks sperm-egg binding and fusion. Molecular and Cellular Biology, 1998, 9:311a.

Curran S and Sawangdee Y. Demographic and Environmental Factors Affecting Agricultural Decision Making. IPSR, Fieldwork Report Mahidol University, 1998.

Dahal DR and Fricke T. Tamang Transitions: Transformations in the culture of childbearing and fertility among Nepal's Tamang. Nepalese Studies, 1998, 25:59-77.

Diekman AB, Norton EJ, Klotz KL, Westbrook VA, Shibahara H, Naaby-Hansen S, Flickinger CJ, and John C Herr. N-linked Glycan of a Sperm CD52 Glycoform Associated with Human Infertility. FASEB Jounal, 1998.

Entwisle B, Walsh S, Rindfuss R, and Chamratrithirong A. Landuse/Landcover and Populatin Dynamics, Nang Rong, Thailand. In Diana Liverman, Emilio F. Moran, Ronald R. Rindfuss, and Paul C. Stern (eds.), People and Pixels: Linking Remote Sensing and Social Sciences. National Academy Press, 1998, 121-144.

Espinosa VM. El Dilema del Retorno: Migracion, Genero y Pertenencia en un Contexto Transnacional. Zamora: El Colegio de Michoacan. 1998.

Estrella G and Zenteno R. Intergracion de la Mujer a lost Mercados de trabajo Urbanos on Mexico: 1988-1994. Estudios Demograficos y Urbanos, 1998, 41:116-42.

Faust K, Entwisle B, Rindfuss R, Walsh S, and Sawangdee Y. Spatial Arrangement of Social and Economic Networks Among Villages in Nang Rong District, Thailand. Conditionally accepted by Social Networks. International Social Network Meetings, San Diego, 1998.

Flickinger CJ, Baran ML, Howards SS, Herr JC. Degeneration of the seminiferous epithelium following epididymal obstruction in prepubental rats. Anat. Rec, 1998, 102-105.

Fricke T, Thornton A and Dahal DR. Netting in Nepal: Social Change, the Life Course, and Bride-service in Sangila. Human Ecology, 1998, 26(2):213-237.

Ge K. The preparation of food-based dietary guidelines for China. In Shetty and Gopalan (eds). Diet, Nutrition and Chronic Diseases. Smith-Golden/Nishimu ra, 1998, 119-122.

Ge K and Zhai F. Health and Nutrition Status of Residents in 8 Provinces of China. Beijing Science and Technology Publication House, 1998.

Jun J. Knowledge, Organization, and Symbolic Capital: A Study of Two Confucius Temples, in Thomas Wilson ed., On Sacred Ground: Culture, Society, Politics, and the Formation of the Confucius Temple. Cambridge, MA: Harvard University Press. (Please note that this is a revised and expanded version of "Political Power and Symbolic Capital.". Chinese Sociology Quarterly, 1998, 1:5-22.

Kallen CB, Arakane F, Christenson LK, Watari H, Devoto L, and Strauss III JF. Unveiling the mechanism of action and regulation of the steroidogenic acute regulatory protein (StAR). Molecular and Cellular Endocrinology, 1998, 145, 39-45.

Kanchanachitra C. Iodized Salt Production and Distribution. Mahidol Journal, 1998, 5(1).

Kanchanachitra C. Best Practice in Reduction of Vulnerability of Girls to HIV/AIDS. Journal of Population and Social Studies, 1998, 7(1).

Kapil AM, Rahman M, and van Genneken J. Induced Abortion in Mattab, Bangladesh: Trends and Determinants. International Family Planning Perspectives, 1998.

Kisher G and Matthews S. Family Planning Service Availability in Nepal: The Case of Chitwan District. 1998.

Knodel J, Friedman J, Anh TS,and Cuong BT. Intergenerational Exchanges in Vietnam: Family Size, Sex Composition, and the Location of Children. Population Studies 98-430. PSC Research Report, 1998, 54(1):89-104.

Li Y, Zhai F, He Y, Chang Y, Li W, Jia F. The changing trend of children's malnutrition and calculation in 2000. The Chinese Journal of Health Education, 1998, 9:4-5.

Li Y, Zhai F, Li W, Ma G. Developing nutrition education activities for rural children's parents in China. Journal of Hygiene Research, 1998, 4-276.

Lin H. Energy Requirement. In Present Knowledge of Nutrition, Wen Z, Chen J (Eds.). Chinese People's Medical Publishing House, 1998.

Lin H, Jia C, Wu X, Chen X, Ge K. Serum APO B Level of the Patients with CHD and its Association with Nutrition. Journal of Hygiene Research, 1998, 27(2):126-129.

Lu B, and Zhai F. New Development: the Maternal Impact on Children Nutrition. In Ge K, Zhai F (Eds). The Health and Nutrition Status of the People in 7 Provinces of China. Beijing Scientific and Technical Press, 1998, 75-82.

Lu B, Zhai F. Role of Women on Nutrition of Families in Developing Countries. Foreign Medical Sciences-Hygiene, 1998, 25(1):27-31.

Lu B, Zhai F, Jin S, Ge K. The Impact of Maternal Education on the Dietary and Nutritional Status of Preschool Children: a Case Study in 8 Provinces of China. Journal of Hygiene Research, 1998, 27(5):328-331.

Lu B, Zhai F, Jin S, Ge K. The Impact of Maternal Income on the Dietary and Nutritional Status of Preschool Children in Urban Areas of 8 Provinces of China. Chinese Journal of Public Health, 1998, 14(10):603-605.

Lu B, Zhai F, Jin S, Ge K. The Impact of Maternal Nationality on the Dietary and Nutritional Status of Preschool Children in 3 Provinces of China. In: Ge K, Zhai F, (eds). The Health and Nutritional Status of the People in 8 Provinces of China. Beijing Scientific and Technical Press, 1998, 35-37.

Mandal A, Naaby-Hansen S, Klotz K, Wolkowicz MJ, Shetty J, Cesar F, Flickinger CJ and Herr JC. Two novel human sperm fibrous sheath proteins which undergo phosphorylation during capacitation. Molecular and Cellular Biology, 1998, 9(supp):178a.

Norton EJ, Diekman AB, Westbrook VA, Klotz KL, and Herr JC, Immunohistochemical localization of a carbohydrate epitope in the human reproductive tract: Implications for spermicidal development. The FASEB Journal, 1998, 12(5):A1104.

Paeratakul S, Popkin BM, Ge K, Adair LS, and Stevens J. Changes in Diet and Physical Activity Affect the Body Mass Index of Chinese Adults. International Journal of Obesity, 1998, 22:424-32.

Punpuing S, and Tangchonlatip K. Health Futures Study: Social and Population Aspects. Health Policy and Planning Journal, 1998, 1(2):4-12.

Reddi PP, Flickinger CJ, Herr JC. Minimal promoter essential for round spermatid-specific gene expression resides within the -420 to +28 BP region of the SP-10 gene. Biology of Reproduction, 1998, 58(supp)1:163.

Sawangdee Y. AIDS Knowledge and Knowledge about AIDS Center of Youth and Young Adults in Muang District, Rayond Province. Journal of Population and Social Studies, 1998, 7(1):95-121.

Sawangdee Y. Rural-Urban Migration Trends: A Case Study of Nang Rong, Thailand. Journal of Demography, 1998, 14(1):29-55.

Sawangdee Y, Isarabakdi P, & Sanpoowan M. Problems and Suffering of Patients when Using Health Services (in Thai). IPSR Research Report Mahidol University, 1998.

Sethaput C et al. 1998 Survey of Thai Youth. Institute for Population and Social Research, Mahidol University at Salaya. IPSR Mahidol University, 1998.

Sethaput C, and Pattaravanich U. Family and Work Responsibilities, Health Status and Marital Stability of Woman Managers. IPSR Mahidol University, 1998.

Shetty J, Naaby-Hansen S, Shibahara H, Bronson R, Flickinger CJ, Herr JC. Immunodominant sperm antigens recognized by sera from infertile men and women containing antisperm antibodies. Biology of Reproduction, 1998, 58(supp)1:131.

Short S, Zhai F, Mingliang Y, and Siyuan X. China's One Child Policy and the Care of Children. Studies in Family Planning, 1998.

Sibanda A. Reproductive Change in Zimbabwe and Kenya: The Role of the Proximate Determinants in Recent Fertility Trends. Social Biology, 1998, 46:1-2.

Sirirassamee B and Isarabhakdi P. Assessment of Needs and Supply Availability for Survival and Basic Services for Mothers and Children in Remote Areas of Thailand. IPSR Mahidol University, 1998, 223.

Soonthorndhada K, Kanungsukkasem U, Tangchonlatip K, and Punpuing S. Child Care Situations in Thailand: A Synthesis Report. IPSR Mahidol University, 1998, 229.

Ulloa-Aguire A, Conn PM. G protein-coupled receptors and the G protein family. Cellular Mechanism, Chapter 6. Handbook of Physiological-Endocrinology, 1998.

Ulloa-Aguire A, Stanislaus D, Arora V, Vaananen J, Brothers S, Janovick J, and Conn PM. The third intracellular loop of the rat gonadotropin-releasing hormone receptor couples the receptor to Gs- and Gq/11 - mediated signal transduction pathways: evidence from loop fragment transfection in GGh3 cells. Endocrinology, 1998.

Wang Y, Popkin BM, and Zhai F. The Nutritional Status and Dietary Pattern of Chinese Adolescents, 1991 and 1993. European Journal of Clinical Nutrition, 1998, 52:908-16.

Yoddumnern-Attig B, Kanungsukkasem U, Sirirassamee V, Kanchanachitra K, and Tangchonlatip K. Behavioral Determinants of Health Problems. In Nath Phamornpawat, Kraisith Tantisirin and Yaowarat Porapakham (eds.) Strategic Plan for Health Research. Bangkok. Chulalongkom University Book Center, 1998, 526-548.

Zenteno R. Crisis Economica y Determinantes de la Oferta de Trabajo Femenino Urbano en Mexico: 1994-1995. Estudios Demograficos y Urbanos, 1998, 41:10-38.

Zhai F, Lu B, Jin S et al. The Impact of Maternal Income on the Dietary and Growth Status of Preschool Children in 8 Provinces of China. Journal of Hygiene Research, 1998, 27(4):269.

Zhai F, Lu B, Jin S, Popkin BM, and Ge K. The Dietary and Growth Status of Preschool Children in 8 Provinces of China. Acta Nutrimenta Sinica, 1998, 20(3):245-249.

Zuberi T, and Sibanda A. Ferterlity Decline in sub-Saharan Africa: What Can We Learn from Analyzing African Censuses. Presented at International Union for the Scientific Stufy of Population (IUSSP). Nairobi. Seminar on Reproductive Change in sub-Sahara Africa, 1998.

1997

Adoyo PA, Lea IA, Richardson RT, Widgren EE, O'Rand MG. Sequence and characterization of the sperm protein Sp17 from the baboon. Molecular Reproductive Development, 1997, 47:66-71.

Anderson BA, Kim DS, and Romani JH. Health Personnel, Son Preference, and Infant Mortality in China. PSC Research Report, 1997, 97-401.

Anh TS, Cuong BT, Goodkind D and Knodel J. Living Arrangements, partilineality, and sources or support among elderly Vietnamese. Asia Pacific Population Journal, 1997, 12(4):69-88.

Avellar MCW, Gregory CW, Power SGA, Frency FS, Androgen-dependent protein interactions within an intron 1 regulatory region of the 20-kDa protein gene. Journal of Biological Chemistry, 1997, 272:17623-17631.

Bagavant H, Fusi FM, Baisch J, Kurth B, David CS, and Tung KS. Immunogenicity and contraceptive potential of human zona pellucida 3 peptide vaccine. Biology of Reproduction, 1997, 56:764-770.

Chamratrithirong A. Summary and Conclusion - Longitudinal Study of the Demographic Responses to a Changing Environment in Nang Rong. Institute for Population and Social Research, Mahidol University, 1997, 59-63.

Chamratrithirong A and Sethaput C, eds. Fieldwork Experiences Related to the Longitudinal Study of the Demographic Repsonses to a Changing Environment in Nang Rong. Salaya, Thailand: Institute for Population and Social Research, Mahidol. Institute for Population and Social Research, Mahidol University, 1997.

Du S. Moleculal Biological Study on Prostate Cancer - a Review. Foreign Medical Sciences: Oncology, 1997, 24(suppl):302-304.

Du S, Shi L, He S, Relationship Between Dietary Nutrients Intakes and Human Prostate Cancer. Journal of Hygiene Research, 1997, 26(2):122-125.

Du S, Shi L, Zhai H, Zhai F. Survival Analysis of Prostate Cancer. Chinese Journal of Epidemiology, 1997, 18(suppl):571-572.

Du S, Zhu W, Shi L, Zhai F. Study on Quality of Life in Patients with Prostate Cancer. Journal of Hygiene Research, 1997, 26(6):400-403.

Du S, Zhu W, Zhai F. Epidemiology Study on Human Prostate Cancer in Wuhan City. Journal of Hygiene Research, 1997, 16(5):356-359.

Ge K. Diet and Dietary Guidelines in China. Dietary Guidelines in Asian Pacific, Phillipines, 1997, 17-27.

Ge K. Explanation for the Chinese Dietary Guidelines. Chinese Food and Nutrition, 1997, 2:36-38.

Ge K, Zhai F, and Wang Q. Effect of Nationality on Dietary Pattern and Meal Behavior in China. American Journal of Clinical Nutrition, 1997, 65(4suppl):1290-1294.

Goodkind D and Anh PT. Multi-method Approaches for Research on Sex and HIV/AIDS: Some Results of a Pilot Study of Young Adults in Hanoi. Research Report, 1997, 97-407.

Herr JC, Naaby-Hansen S, Diekman AB, Wolkowicz MJ, Westbrook-Case A, Norton E, Klotz K, Shibahara H, Koul D, Mandal A, Shetty J, Flickinger CJ. Discovery and characterization of sperm contraceptive vaccinogens. CSIRO, Australia. Vaccines Beyond 2000, 1997.

Herr JC, Naaby-Hansen S,, Wolkowicz MJ, Shibahara H, Koul D, Mandel A, Shetty J, Flickinger CJ. Strategies for the development of a sperm antigen based contraceptive vaccine. ESHRE 13th Annual Meeting, June 22-25, 1997, (Abstracts), Edinburgh, Scotland. Human Reproduction 12, 1997, 63.

Jampaklay A. Data Collection of the Old and New Households - Longitudinal Study of the Demographic Responses to a Changing Environment in Nang Rong. Institute for Population and Social Research, Mahidol University, 1997, 23-42.

Knodel J, Amornsirisomboon P, Khiewyoo J, Living Arrangements. Family Support and the Welfare of the Elderly: Findings and Implications of the 1994 Survey of Elderly in Thailand. Comparative Study of the Elderly in Asia. Research Report, 1997, 97-43.

Knodel J, Scottipong R, and Saengtienchai C. AIDS Awareness and Knowledge in Thailand: Quantitative and Qualitative Evidence. Research Report, 1997, 97-380.

Kurth B, Srinvasan J, Battacharya R, Flickinger C, Herr J and Curtiss R. Recombinant avirulent Salmonella does not induce antigen-spepcific immune response in cynomolgus monkeys. Immunology and Cellular Biology, 1997, 75(supp 1):A56.

Kurth BE, Bryant D, Naaby-Hansen S,, Reddi PP, Weston C, Foley P, Bhattacharya R, Flickinger CJ and JC Herr. Immunological response in the primate oviduct to a defined recombinant sperm immunogen. Journal of Reproductive Immunology, 1997, 35:135-150.

Kurth BE, Weston C, Reddi PP, Bryant D, Bhattacharya R, Flickinger CJ, and Herr JC. Oviductal antibody response to a defined recombinant sperm antigen in macaques. Biology of Reproduction, 1997, 57:981-989.

Naaby-Hansen S, Wolkowicz MJ, Shibahara J,Shetty J, Flickinger CJ, Herr JC. Towards a comprehensive 2-D gel protein database for the human spermatozoon. 30th Annual Meeting. Society for the Study of Reproduction, 1997.

Santiphop T. Data Collection of the Community Profile - Longitudinal Study of the Demographic Responses to a Changing Environment in Nang Rong. Institute for Population and Social Research, Mahidol University, 1997, 13-22.

Sawin SW, Loret de Mola JR, Monzon-Bordonaba F, Wang CL, and Feinberg RF. Hydrosalpinx fluid enhances human trophobalst viability and function in vitro: implications for embryonic implantation in assisted reproduction. Fertil Steril, 1997, 68:65-71.

Sethaput, C and Chamratrithirong A. Fieldwork Design - Longitudinal Study of the Demographic Responses to a Changing Environment in Nang Rong. Institute for Population and Social Research, Mahidol University, 1997, 5-12.

Shibahara H, Naaby-Hansen S, Coonrod SA, Shetty J, Flickinger CJ, Herr JC. Identification of glycosylphosphatidylinositol (GPI)-anchored human sperm membrane proteins. 30th Annual Meeting. Society for the Study of Reproduction, 1997.

Stein P, Worrad DM, Belyaev ND, Turner BM, Schultz RM. Stage-dependent redistributoins of acetylated histones in nuclei of the early preimplantation mouse embryo. Molecular Reproductive Development, 1997, 47:421-429.

Tangchonlatip K. Migrant Follow-up Study - Longitudinal Study of the Demographic Responses to a Changing Environment in Nang Rong. Institute for Population and Social Research, Mahidol University, 1997, 43-58.

Wolkowicz MJ, Naaby-Hansen S, Herr JC. Cloning, sequencing, expression and analysis of a human testicular tektin B1-like protein. Biology of Reproduction, 1997, 58(supp1):175.

1996

Anh TS, Knodel J, Lam David, and Friedman J. Family Size and Children's Education in Vietnam. Presented and submitted at 1996 PAA meetings, New Orleans. PAA Meetings, 1996.

Axinn W, and Fricke T. Community Context, Natal Kin Ties, and Demand for Children. Rural Sociology, 1996, 61(2).

Dahal DR, Fricke T and Lama RK. Family transitions and the practice of bride service in the Upper Ankhu Khola: A Tamang Case. Contributions to Nepalese Studies. Nepalese Studies, 1996, 23(2):377-401.

Lea IA, Adoyo PA, O'Rand MG. Autoimmunogenicity of human sperm protein Sp17 in vasectomized men and identification of linear B cell epitopes. Fertil Steril, 1996, 67:355-361.

Lou YH, Bagavant H, Ang J, McElveen MF, Thai H, and Tung KSK. Influence of autoimmune ovarian disease pathogenesis on ZP3 contraceptive vaccine design. Journal of Reproductive Fertility, 1996, 50(supp):159-163.

Sivashanmugam P, Herr JC and Rajalakshmi M. Immunofluorescence localization of SP 10 protein on monkey spermatozoa during maturation. Current Science, 1996, 70(12):1075-1076.

Suri A, Chhabra S, Upadhyay S. Identification of human sperm antigen recognized by serum of an immunoinfertile woman: a candidate for immunocontraception. American Journal of Reproductive Immunology, 1996, 36:317-326.

VanLandingham M, Knodel J, Saengtienchai C, and Pramualratana A. In the Company of Friends: Peer Influence on Thai Male Extramarital Sex. Submitted, also appeared as Population Studies Center Research Report, February 1996. PSC Research Report, 1996, 96-360.

1995

Anderson B. Demographic and Social characteristics of Nationalities in Yunnan Province, China. Presented at Conference of Population and Sustainable Development, Beijing, October 1995; also appeared as Population Studies Center Research Report, November 1995. PSC Research Report, 1995, 95-352.

Chaunfu Z, Jiamin Z, Anderson B, Jinyun L, and Romani J. Quality, Quantity, and Distribution of Health Personnel by Ethnic Group in Yunnan Province, China, 1982-90. Submitted, also presented at Conference on Population and Sustainable Development, Beijing, October 1995; also appeared as Population Studies Center Research Report October 1995. PSC Research Report, 1995, 95-340.

Dahal DR, Fricke T, and Lama RK. Family Transitions and the Practice of Brideservice in the Upper Ankhu Khola: A Tamang Case. Nepalese Studies, 1995.

Mandal A, and Bhattacharyya AK. Sperm hyaluronidase activation by purified predominant and major basic human semina coagulun proteins. . Human Reproduction, 1995, 10(7):1745-1750.

YEAR NOT RECORDED AND IN PRESS PUBLICATIONS

Ambhaikar M, and Goldberg E. DNA-Protein Interactions in the CCAST Box Region of the Murine Lactate Dehydrogenase C. Promoter. Molecular Reproductive Development, In Press.

Anh TS, Cuong BT, Goodkind D, and Knodel J. Living Arrangements, Patrilineality, and Sources of Support of Elderly Vietnamese. Asia Pacific Population Journal.

Avila J and Perez L. Are Women Saying the Same in Sample Surveys and In-deotg Interviews? A Comparison of Survey and Interview Responses on Household Decision-Making and Marital Relations. Center for Women's Studies, University of the Phillipines, In Press.

Baway AA, Akweongo P, Simmons R, and Phillips JF. Women's Fears and Men's Anxieties: The Impact of Family Planning on Gender Relations in Northern Ghana. Studies in Family Planning, 30(1):54-66.

Brahmbhatt H, Bishai D, Wabwire-Mangen F, Kigozi G, Wawer MJ, Gray RH; The Rakai Project Group. Polygyny, maternal HIV status, and child survival. Rakai, Uganda. Social Science and Medicine, In Press.

Chamratrithirong A, Thongthai V, Boonchalaksi W, Guest P, Kanchanachitra C, and Varangrat A. The Success of the 100% Condom Promotion Programme in Thailand: Survey Results of the 100% Condom Promotion Programme. IPSR Research Report Mahidol University.

Devoto L, Kohen P, Gonzalez RR, Castro O, Retamales I, Vega M, Carvallo P, Christenson LK, Strauss III JF. Control of Human Luteal Steroidogenesis. Molecular and Cellular Endocrinology, In Press.

Fapohunda B, and Rutenburg N. What Men Say About Contraceptive Use in Kenya. African Sociological Review.

Fricke T. Marriage Change as Moral Change: Culture, Virtue and Demographic Transition. In Gavin W. Jones, Jack C. Caldwell, Robert M. Douglas, and Rennie D'Souze (eds.), Oxford University Press. The Continuing Demographic Transition, In Press.

Goodkind D and Anh PT. Reasons for rising condom use in Vietnam. International Family Planning Perspectives, In Press.

Hernández-León R. IA la Aventural: Jóvenes, Pandillas y Migración en la Conexión Monterrey-Houston. G. Mummert, ed. Samora, Mexico: El Colegio de Michoacán. Fronteras Fragmentadas, 115-143.

Hernández-León R and Zñiga V. Making Carpet by the Mile: The Emergence of a Mexican Immigrant Community in an Industrial Region of the U. S. Historic South. Social Science Quarterly, 81(1):49-66.

Hernández-León R and Zñiga V. Nuevos senderos de los migrantes Mexicanos en los Estados Unidos: retos para la educación y el papel de las universidades mexicanas. In La familia transnacional: Migracion Mexico-E.U.,J. Durand and P. Rodriguez, eds. Mexico: Red de Estudios para el Desarrollo Rural. La familia Transnacional:Migracion Mexico-E.U., 123-128.

Hernández-León R, Eschbach K, Hagan J, Rodriguez N, and Bailey S. Death at the Boarder. International Migration Review, 33(3):430-454.

Kespichayawattana J, Aungsuroch Y. Psychological well-being Asian style: The perspective of Thai elders. Journal of Cross-Cultural Gerontology, 16:283-302.

Knodel J, Ruffolo VP, Rattanalangkam P, and Wongboonsin K. Analysis of Fertility Preferences in Thailand: Data from the 1988 and 1993 Population Studies Center and Working Paper, Institute of Population Studies, Chulalongkorn University. PSC Research Report.

Knodel J, Saengtienchai C,Van Landingham M, and Lucas R. Sexuality, Sexual Experience and the Good Spouse: Views of Married Thai Men and Women. In Gender and Sexuality in Modern Thailand, Peter Jackson and Narida Cook (eds.). Silkworm Press, In Press.

Magaly Sanchez R, and Pedrazzini Y. Le Barrio, la rue, les gangs, une critique de la Sociologie Urbaine IN Enjeux de la Sociologie Urbaine. Sous la Direction de Michel Bassand, Vincent Kaufmann, et Dominique Joye. Presses polytechniques et universitaires romandes. CH Lausanne. Science, Technique, Societé.

Marx MA, Brahmbhatt H, Beilenson P, Brookmeyer RS, Strathdee SA, Alexander C, Vlahov D. Impact of Needle Exchange Programs on Adolescent Perceptions about Illicit Drug Use. AIDS and Behavior, In Press.

Massey D and Durand J. Migrantes agradecidos. Artes de Mixico, 53:74-80.

Massey D and Sana M. Seeking Social Security: An Alternative Motivation for Mexico-U.S. Migration. International Migration Review, 38:3-24.

Massey D, Ceballos M, Espinosa K, Palloni A, and Mike Spittel. Social Capital and International Migration: A Test Using Information on Family Networks. American Journal of Sociology, 106:1262-99.

Massey D, Durand J, and Zenteno R. Mexican Immigration to the United States: Continuities and Changes. Latin American Research Review, 36:107-27.

Massey DS, and Zenteno. A Validation of the Thnosurvey: The Case of Mexico-U.S. Migration. International Migration Review, 34:765-92.

Maya-Nunez G, Conn PM. Cyclic adenosine monophosphate and CREB are involved in the transcriptional regulation of gonadotropin-releasing hormone (GnRH) receptor by GnRH in GGH3 cells. Biology of Reproduction, In press.

Ngom P, Akweongo P, Adongo P, Bawah AA, and Binka F. Material Mortality in the Kasena-Nankana District of Norther Ghana. Studies in Family Planning, 30(2):142-147.

Ojeda SR, Romero C, Tapia V and Dissen GA. Neurotropic and cell-cell dependent control of early follicular development. Molecular and Cellular Endocrinology, In press.

Perez, Lorna MA. Thesis - Husbands' Influence on Contraceptive Use Among Married Women in Metro Cebu. Mahidol University.

Reddi PP, Kallio M, Herr JC. Green Flourescent Protein as a Reporter for Promoter Analysis of Testis-Specific Genes in Transgenic Mice. Methods in Enzymology, In Press.

Rutaremwa G. Regional Differences in Infant and Child Mortaity: A comparative study of Kenya and Uganda. The African Population in the 21st Century, Third African Population Conference, vol. I. UAPS-NPU, 79-108.

Sibanda A. A national in pain: Why the HIV/AIDS epidemic is out of control in Zimbabwe. Vol 30. International Journal of Health Services, 4:715-736.

Sibanda A. The Kenyan fertility transition: an age-parity specific analysis of fertility levels and trends. Vol. LV. Genus, #3-4.

Walsh SJ, Butler DR, Malanson GP, Crews-Meyer KA, Messina JP, and Xiao N. Mapping, modeling, and visualization of the influences of geomorphic processes on the alpine treeline ecolone, Glacier National Park, Montana, USA. Integration of Computer Modeling and Field Observations in Geomorphology. (M. Bishop and J. F. Shroder Jr., eds.) The Netherlands. Elsevier Press, In Press.

Wang Y, Bentley ME, Zhai F, Popkin BM. Tracking of dietary intake patterns from childhood to adolescense among Chinese children and adolescents over a six-year follow-up period. Journal of Nutrition, In Press.

Zhai F, Lu B, Popkin BM and Ge K. The Dietary and Nutritional Status of Women in 8 Provinces of China. Acta Nutrimenta Sinica, In Press.

Zuberi T and Sibanda A. Fertility estimation in sub-Saharan Africa: Applying own-children methods to African censuses, Oxford University Press. IUSSP.