



SSI to Celebrate Ten-Year Anniversary

2008 is an important year for SSI as it marks our tenth anniversary! While our founders had envisioned the formation of a non-profit for years and had even chosen and registered our name in 1995, it wasn't until 1997 that the funds to jump-start the organization became available. That year, Eva Harris received a MacArthur Award that not only provided public recognition of the technology transfer work she, along with a group of colleagues, had started years before, but the unrestricted funds that came with the award allowed them to continue with the work in a more formal capacity. And so, in 1998, SSI became a reality. Harris and others who had contributed to the planning and teaching of workshops throughout Latin America formed the founding Board of Directors. In ten years, SSI has come a long way. It has grown into a medium-sized organization with a million-dollar annual budget, offices in San Francisco and Managua and a large program in Egypt, a highly involved Board of Directors, a supportive Advisory Council, and hundreds of collaborators and volunteers throughout the world. We appreciate the hard work of all who have served on our Board since SSI's inception and are grateful to everyone who has supported us over the years. It is with anticipation and enthusiasm that we look forward to our tenth anniversary and to sharing our successes with you. We couldn't have done it without you!

SSI-Nicaragua Launches Health IT Project

In an exciting development, our collaborators at SSI-Nicaragua have launched a new project in Managua. The project, which received initial funding from the Ibrahim El-Hefni Technical Training Foundation, emerged from the highly successful implementation of information and communication technologies as part of the Pediatric Dengue Cohort Study in Nicaragua. The project is an entirely local response to the urgent need to overhaul the vaccination and prenatal care system in Nicaragua and is tailored to help resident scientists and healthcare workers meet this need.

Nicaragua's public health system is currently struggling to meet the goal set by the Pan American Health Organization for 95% vaccination coverage of preventable infectious diseases by 2008 as well as the Millennium Development Goal of a three-quarters reduction in the maternal mortality ratio by 2015. "Current efforts at providing vaccine coverage and prenatal care in Managua suffer tremendously from a lack of computerized registries and other inefficiencies," says SSI President Eva Harris. "This innovative project will incorporate a number of technologies to streamline information flow and accessibility, improve the quality of data along with quality control procedures, and reduce operational costs in Managua's Ministry of Health (MOH) Health Centers."



Participants at a training workshop introducing the new Immunization System Database (SIPAI)

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New Influenza Study in Nicaraguan Cohort

SSI is assisting the Nicaraguan Ministry of Health (MOH) in setting up influenza virus testing as part of a two-year prospective study of the epidemiology of influenza in Nicaraguan children. The study, a collaboration with UC Berkeley, will characterize the seasonality, burden and risk factors for laboratory-confirmed influenza in children who are currently participating in the Pediatric Dengue Cohort Study. It will be the first large-scale study to characterize influenza in Central America and is essential to furnish information supporting the need for vaccination and interventions against respiratory diseases in the region. The project got off to a strong start, with the Nicaraguan National Virology Laboratory setting up both RT-PCR and virus isolation of influenza virus within the first few weeks. Previously, the MOH had not been able to isolate influenza virus, largely due to a lack of resources, and thus been unable to participate in World Health Organization influenza surveillance efforts. Now, the rate of virus isolation in RT-PCR-positive swab samples is over 90%. Two grants were recently awarded by NIAID/NIH to support the study and the full-length sequencing of all influenza virus isolates, which will provide critical information about the transmission and geographic spread of influenza. The samples that are negative for influenza will be tested in Nicaragua for other respiratory viruses such as respiratory syncytial virus, parainfluenza virus, and human metapneumovirus, as well as for unknown viruses in collaboration with Dr. Joe DeRisi at UC San Francisco. This work will generate novel and important data about viruses circulating in the region. Special thanks to Aubree Gordon at UCB and Angel Balmaseda and Yara Saboría in the Virology Laboratory in Managua for their excellent work!

Success Story: Dr. Mohamed Kohla

Dr. Mohamed Kohla is a scholar from the National Liver Institute at Menoufiya University in the Nile Delta region of Egypt. The proud recipient of a two-year competitive grant from the Egyptian government, Mohamed is the first research fellow to receive a supplemental scholarship through SSI's Egypt Program. Based at the California Pacific Medical Center (CPMC) in San Francisco, Mohamed works as a research fellow in Dr. Stewart Cooper's Liver Immunology Laboratory.



Dr. Mohamed Kohla

How has the opportunity to come to the United States affected your life and career?

In a very positive way. Because I was here without my wife and two sons, I had a lot of time to devote to my work, which made my time in the U.S. very productive. I am very proud of the things I have been able to accomplish and am happy that my family has been so supportive. I feel very positive about the whole experience. I have had a chance to work in a great laboratory and work with some wonderful people, including Stewart Cooper and Ed Wakil. I have also had the opportunity to get a great deal of clinical exposure, improve my laboratory skills, and socialize with prominent researchers in the field of hepatitis C.

What have you been able to accomplish since arriving to the United States?

One thing that I have learned is preparing outlines and writing scientific papers. I have four abstracts already accepted: two in the American Association for the Study of Liver Diseases, one in the Digestive Disease Week, and one in the International Liver Cancer Association (ILCA). Thanks to SSI, I was able to attend the first annual meeting of the ILCA in Barcelona, Spain, as well as the 58th annual meeting of the American Association for the Study of Liver Diseases in Boston.

What is the biggest difference between conducting research in Egypt versus in the United States?

The availability of resources. In the United States, it's easier to gain access to the space, equipment, and financial resources that you need. In Egypt, those resources are often not available. Bureaucracy and corruption are two other problems that make doing research in Egypt more difficult. What I like about doing research in the United States is that people here are really supportive and that there is a great deal of scientific expertise. The work that I have been able to do here in two years would have taken me twenty years in Egypt!

Has the experience been different from what you imagined before arriving?

It was better than expected. The whole experience has been very healthy. I feel very accepted and have been able to be especially productive. My mentors have been really supportive and have given me a chance to give talks and presentations to colleagues in the lab and clinical staff. It has been amazing. I feel very confident. I can freely express my opinion and not everyone has to agree with me. We don't all have to think alike. No one knows everything, which is why it's important to exchange information and ideas.

What will be you working on once you return to Egypt?

We are still working out the details. Currently, I am an assistant lecturer. To get promoted to lecturer, I need to defend my thesis and apply for the Hepatology Doctorate Exam. I am hoping to establish a research program at the National Liver Institute at Menoufiya University. I plan to continue research examining the immune response in hepatitis C patients in Egypt. We will have to see how things go and adjust our plans to fit the reality there. I am very optimistic that I can use what I have learned here back home.

Nicaragua IT Project.....

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As a first step, SSI's informatics team, with direct input from MOH officials, designed, refined, and implemented a new informatics tool, the Immunization System Database (SIPAI), to capture data during vaccination campaigns and routine immunizations and enable real-time analysis essential for sound decision-making. In June 2007, the new database was launched and 100% of the Health Centers in Managua adopted it after a training workshop conducted by SSI and the MOH. Version 2 of the database was implemented in October 2007, and routine reporting of immunization indices using SIPAI will soon be mandatory throughout Managua's MOH Health Centers. Additional technologies (including personal data assistants (PDAs) for registries during vaccination campaigns in the field, unique identifiers for mothers and children to enable immediate access to files via the use of barcodes on vaccination and identification cards, and global positioning devices (GPS) for geo-referencing children's and mothers' homes to facilitate

site visits) are being piloted in two Health Centers with the goal of expansion to the entire health network in Managua in the next five years. "Comprehensive immunization and prenatal care is at the core of improved health in Latin America, as in the rest of the world," says Eva Harris. "At SSI, we believe that this can only be accomplished with community buy-in and implementation of effective systems. As such, the project will be carried out by locally employed Nicaraguan SSI and MOH personnel." Key players include Guillermina Kuan, M.D. (Director of the Socrates Flores Vivas Health Center, base of the PDVI and IT studies), William Avilés (SSI-Nicaragua Informatics Director), and Brenda Lopez (SSI-Nicaragua Informatics Officer). The success of the project demonstrates the capability of SSI-Nicaragua's informatics team to implement IT solutions to further improve the vaccination and maternal health systems.

Latin America Program Launches New Ethics Workshop

All scientists are faced with ethical dilemmas, and developing country scientists are no exception. In addition to the issues confronted by all investigators, scientists in the developing world are faced with the ethical implications of international collaborations and of studies that often involve poor and vulnerable populations. SSI saw the need to address these issues, so our Latin America Program launched a new, highly anticipated, special-topic workshop module on bioethics in collaboration with long-time SSI supporter and Advisory Council member Dr. Richard Cash. The workshop, entitled 'Ethical Issues in Health Research', took place from April 19-21, 2007 in Managua, Nicaragua. Funded by the V. Kann Rasmussen Foundation, the workshop was a collaboration between SSI, instructors Dr. Cash and Dr. Dan Wikler, and local organizers Andrea Nuñez, Dr. Jorge Huete, and Mirtha Monterrey. Dr. Cash and Dr. Wikler, both from Harvard's Department of

Population and International Health, presented participants with a range of ethical dilemmas including: research on human subjects, informed consent, genetic research and DNA, and a research study's responsibility to the community. The many interesting case studies presented caused lively discussions and made the workshop interactive and fun. As a result of the workshop, 15 local researchers were made aware of the ethical dilemmas involved in conducting research in developing countries and were provided with knowledge that will enable them to make informed choices and influence local decision-making on the ethical issues that affect their research and their communities. Because of the success of the workshop, SSI hopes to bring the new module to additional Latin American countries in the future and train more scientists in the complicated subject of ethical issues in research.

Dengue Cohort Study Extended for Additional Three Years



Nicole Fitzpatrick (left) and Dr. Guillermina Kuan (right) present cohort statistics and procedures

Thanks to an extension in funding, the Pediatric Dengue Vaccine Initiative (PDVI)-sponsored Pediatric Dengue Cohort Study in Nicaragua will now run through December 2009. In June, the study team revisited the homes of the approximately 3,700 active study participants to administer participant satisfaction surveys and to re-enroll the children for the additional 3 years of the study. In addition to the 3,275 children re-enrolled, 466 children were newly recruited to maintain previously established age group quotas. During the house visits, 93% of the participants indicated their satisfaction with the study. In July, serum samples from all the study children were collected and are currently being processed in conjunction with last year's samples to complete the panorama of dengue virus infection and immunity during the first 3 study years, which is revealing interesting patterns regarding dengue transmission.

The study site at the Socrates Flores Vivas Health Center received many renowned visitors this year, including a 4-month stay by Dr. Eva Harris, who spend her sabbatical in Managua. The time, experience, and energy Eva shared with the team was invaluable. SSI Board Members Drs. James Larrick and Adil Ed Wakil also toured the site, as did representatives of Sanofi Pasteur and collaborators from the Broad Institute. Importantly, we were honored to receive a site visit by our PDVI sponsors in conjunction with hosting the

founding meeting of the Americas Dengue Prevention Board, which was attended by over 30 expert dengue investigators and senior public health officials from various Latin American nations (including Nicaragua!), as well as directors of various international agencies (e.g., CDC Dengue Branch, International Vaccine Institute) and vaccine and diagnostic companies active in the dengue arena (e.g., GSK, Hawaii Biotech, Sanofi Pasteur, PanBio). Based on the praise received during the visit, we believe that the study site left a great impression on the attendees, who were able to observe the study in the field and the laboratory at its pinnacle of action during the annual blood sample collection phase.

With dengue currently upon us, we are still climbing towards the peak of the season. Interestingly, a larger proportion of the cases have been severe and have required hospitalization in 2007 than in previous years, a trend that mirrors an increase in severity observed in our companion hospital-based study and may reflect a change in viral sequence or characteristics, a possibility that is currently under investigation. Computer automation of all the Virology Laboratory protocols, inventory, and storage has been completed, resulting in an impressive state-of-the-art system that ensures the highest level of quality control. In addition, Celia Machado has mastered the challenging plaque reduction neutralization test and has successfully implemented it in Managua, while Tangni Gomez has optimized full-length amplification of dengue viral genomes for our sequencing project in collaboration with the Broad Institute. Virus isolation is working beautifully, with 100% of the RT-PCR-positive cases processed to date being isolated this dengue season. Finally, we are excited to implement quantitative RT-PCR measurements of viral load on the new realtime PCR machine, which has now arrived in Managua. Thanks to training received from Dr. Jorge Munoz and staff at the CDC's Dengue Branch Laboratory in Puerto Rico, Nicaraguan scientist Yolanda Tellez is ready to put the system to work!



A girl in the Pediatric Dengue Cohort Study during the annual sample collection with study gift

Supporter of the Year: Ibrahim El-Hefni Technical Training Foundation

Dr. Ibrahim El-Hefni was a parsimonious man when it came to himself, but he was most magnanimous when it came to others. El-Hefni never bought expensive clothes and didn't own a fancy watch. His family had to twist his arm to buy a car that actually worked. He was a self-made business man, who discovered that what was most important to him, in the end, was giving a great deal of his money away. SSI is grateful to have been a beneficiary of this generosity since 1998, our founding year, giving us the support to fulfill a dream of creating an organization to improve public health in developing countries.

A native of Egypt, El-Hefni received an engineering degree from the University of Cairo and a PhD in electrical engineering from Sheffield University in England. It was in England that he met his wife Wensley, and together they came to the United States in 1959. In the 1970's, El-Hefni started his own company, Microwave Research Corp., in the basement of his North Andover, Massachusetts, home with an initial investment of \$3,000. For the next 30 years, he successfully grew his business manufacturing components in airplane radar guidance systems and, in turn, employing hundreds of people.

In 1985, El-Hefni created the Ibrahim El-Hefni Technical Training Foundation (TTF) to fund educational opportunities for the disadvantaged and further medical research in infectious diseases, particularly hepatitis C, a disease that he contracted at a young age in Egypt and battled his whole life. Trained as a nurse in England, Wensley joined her husband in supporting the foundation's goals and helping disadvantaged populations around the world. Since her husband's death in May 2005, Wensley has continued to proudly pursue the vision created by her late husband. El-Hefni's daughter Suzanne Wright, an attorney in California, has also become very involved with the foundation her father created. "My father did not believe in hand-outs," says Wright. "He believed that if someone was willing to work hard to advance themselves, he would happily provide the funds for their education if they could not afford it. Having lived it himself, he truly believed in the American dream. He knew that for most people, the secret of living that dream meant access to higher education." For that reason, the Foundation has enthusiastically supported scholarships for students in need.

TTF has made it possible for SSI to support hepatitis-related research in Egypt and to have a presence there as a visible international NGO working hard to empower Egyptians to better understand and resolve the complexity of the hepatitis C epidemic in particular. To date, the Foundation's support in Egypt has allowed young Egyptian scientists to develop research skills, funded annual scientific workshops in Egypt, helped Egyptian institutions gain access to peer-reviewed electronic journals and understand how to properly utilize these very resources, and supported a research study on acute hepatitis C with the goal of contributing to the development of vaccine-based therapy. Recently, TTF branched into Nicaragua in support of SSI's new information technology project. SSI is thrilled to continue to work with TTF on goals of mutual importance in improving health in developing countries.



Dr. Ibrahim El-Hefni and his wife Wensley El-Hefni

Thank You to our Volunteers and Donors

VOLUNTEERS.

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Latin America Program Continues to Train Local Scientists

2007 was another great year for our Latin America Program. The training cycle got off to an early start with a workshop in January on flow cytometric detection of dengue virus-infected cells and characterization of immune cells. The workshop, which took place at the Ministerio de Salud in Lima, Perú, trained nine scientists from the Instituto Nacional de Salud and was a follow-up to previous successful workshops in Perú taught by Nicaraguan SSI instructors: one on molecular detection and typing of dengue viruses and another on in-house preparation of dengue antigen for serological diagnostic tests. The summer was a busy one for Scientific Director, Maria Elena Peñaranda, with three writing workshops: two on grant-writing and one on scientific manuscript-writing. All the workshops took place in Panamá and were sponsored by the Secretaría Nacional de Ciencia y Tecnología (SENACYT). It is our hope that as a result of the manuscript-writing workshop, which trained 12 local scientists, the number of manuscripts published by Panamanian scientists will increase, raising the credibility of local researchers. In addition, the grant-writing workshops, which trained 20 local scientists, equipped our trainees with the skills they need to secure support for future research projects.



Instructor Robert Beatty (right) with Maria Paquita García Mendoza and Carlos Patricio Padilla Rojas in Perú.

Other 2007 highlights include a \$10,000 grant given to Dr. Clemencia Ovalle of Bogotá, Colombia, as part of our Small Grants Program. Dr. Ovalle received the grant to study the standardization of PCR-RFLP of mini-exons in *Leishmania* for the diagnosis and characterization of cutaneous and mucosal forms of leishmaniasis, after successfully participating in an SSI workshop on leishmaniasis and submitting a meritorious proposal about the proposed work. Additionally, in April, a large shipment of materials was sent to Guayaquil, Ecuador. As part of our Material Aid Program, we channel surplus scientific equipment and supplies to research scientists in the developing world with the intention of creating full-scope laboratories capable of performing high quality diagnostics and infectious disease research. A total of 73 boxes were sent to researchers at the Instituto Nacional de Higiene Leopoldo Izquieta Perez.

SSI Thanks V. Kann Rasmussen Foundation for Six Years of Support

We would like to take this opportunity to thank the V. Kann Rasmussen Foundation (VKRF) for their six years of generous support. We are deeply grateful to the VKRF for believing in our organization and our scientific capacity building work. Thanks to the VKRF, our Latin America Program was able to train more than 500 developing country scientists from 14 countries during 21 training workshops in 10 Latin American countries. In addition, the program awarded 7 grants totaling \$58,000 and sent hundreds of thousands of dollars of material aid to 10 countries. We appreciate the VKRF's loyal support and are particularly thankful for the trust and flexibility the Foundation has shown us over the years. Thank you from all of us at SSI and beyond!

Board of Directors Represents SSI and Welcomes New Members

We were fortunate to receive substantial media coverage about our scientific capacity building work in 2007. Much of this publicity was due to a call by the Council of Science Editors to science journals around the world to simultaneously publish articles in October 2007 on the global theme of Poverty and Human Development. As a result of the Global Theme Issue Event, articles about SSI's work appeared in *Nature Medicine*, *Nature Chemical Biology*, *Nature Methods*, and *PLoS Medicine*. In addition, we submitted invited book chapters to "Scientific Approaches to Understanding and Reducing Poverty" as part of a volume by the New York Academy of Sciences and to "The New Humanitarians" by Praeger/Greenwood. We have received many wonderful responses as a result of the articles and thank the editors and reporters for thinking of us. Each year, members of our Board of Directors represent SSI and our work, and 2007 was no exception. Christine Rousseau presented a talk entitled "Sustainable Sciences Institute: A Global Science Collaborative" at the University of Washington Bioscience Careers in Seattle on March 21. Eva Harris presented SSI's work at: the Institute for Global Health at the University of California, San Francisco in San Francisco on June 13, the Oxford Conference on Innovation and Technology Transfer for Global Health: Bridging the Gap in Global Health Innovation - From Need to Access in Oxford, England on September 11, and the American Society of Tropical Medi-



Board Members: P. Robert Beatty, Stephen Popper, Christine Rousseau (with daughter Ana Elisa), Eva Harris, Josefina Coloma, Adil Ed Wakil, Jonathan Cronander, Freya Spielberg, and Subhash Vasudevan. James Larrick and Deborah Lans are not pictured.

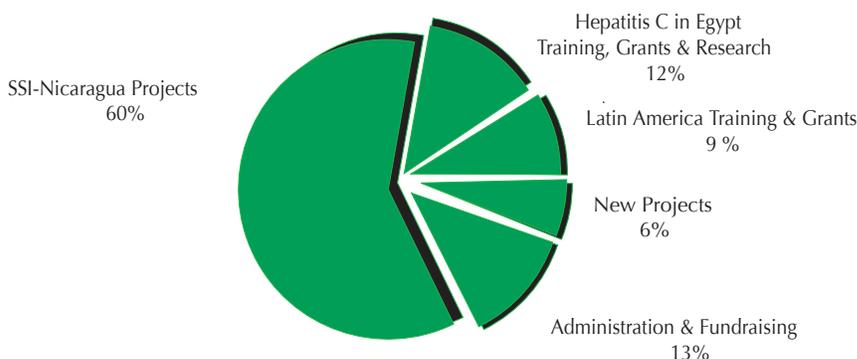
cine and Hygiene 56th annual meeting in Philadelphia on November 5. The year also saw some changes on our Board of Directors. Most notably, we welcomed two new members, Freya Spielberg and Subhash Vasudevan, to our Board. In addition, Jonathan Cronander stepped down as treasurer and was replaced by Josefina Coloma. We would like to thank Jonathan for his many years of dedication and support and look forward to his continued input as a member of our Board.

Newsflash: Stay Informed

Are you interested in receiving more regular updates about SSI? It's easy. Simply go to our website (www.ssilink.org), enter your email address in the 'subscribe to our electronic newsletter' box, and click on the 'Go' button. You will start receiving our Newsflash as soon as the next month starts and a new issue is produced. Each month we will bring you the latest news about SSI as well as a short interview with a person involved with our organization. As a subscriber and SSI supporter we welcome your feedback and article ideas. We look forward to keeping you informed!

2007-08 Operational Budget

Total Budget: \$1,020,000



Sustainable Sciences Institute

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