



2015

BVGH Partnership Hub Report

**Catalyzing Partnerships
for Global Health**



WIPO Re:Search Collaboration - Pfizer:
Pfizer shared its Investigator's Brochure for
modipafant with 60 Degrees Pharmaceuticals
(60P) to support its Phase II clinical trial using
modipafant to treat dengue fever.

Dear WIPO Re:Search Members and Friends,

It is hard to believe that over four years have passed since WIPO Re:Search was launched. Together, we have accomplished a great deal in a very short period of time. WIPO Re:Search was established to provide research organizations – including the world’s leading biopharmaceutical companies – with a platform through which they could share their intellectual property assets with malaria, tuberculosis, and neglected tropical disease (NTD) researchers to advance product development efforts. The Consortium and its Members have exceeded our wildest expectations on this front. By the end of 2015, 98 research collaborations had been established between Members, including 21 established in 2015. More importantly, 15 of these projects have progressed to the next stage of product development (pages 6-7). The results of these collaborations have also begun to be published in peer-reviewed journals – an industry gold standard measurement of success (pages 8-9). With 53 research collaborations currently active, I have no doubt WIPO Re:Search and its Members will continue to make exciting progress in the fight against NTDs.

In 2015 we welcomed two new biopharmaceutical companies, Takeda Pharmaceutical Co. Ltd. and Janssen, the Pharmaceutical Companies of Johnson & Johnson, to WIPO Re:Search. We are excited by what Takeda and Janssen will bring to WIPO Re:Search in addition to what our other companies – Alnylam Pharmaceuticals; Eisai Co., Ltd.; GlaxoSmithKline; Merck KGaA, Darmstadt, Germany; Merck & Co., Inc.; Novartis AG; Pfizer Inc.; and Sanofi S.A. – are already contributing to research collaborations. Examples of WIPO Re:Search collaborations leveraging assets from these company Members are highlighted throughout this report.

Looking ahead, BVGH will focus significant attention on the 53 active WIPO Re:Search collaborations by providing alliance management and project support. In parallel, we will continue to foster new connections and collaborations across our Member organizations in 2016.

We are encouraged by the progress our Members have made and look forward to what will be accomplished in 2016. From all of us at BVGH, we thank our Members for their contributions to collaborations and their dedication to developing products to prevent, diagnose, and treat diseases of poverty. We are proud to be your partner in the joint mission to erase the burden that malaria, tuberculosis, and NTDs have on individuals around the world.



Jennifer Dent
President, BVGH

Annual Report Opening Letter



2015 Partnering Objectives and Achievements

In 2015, BVGH established 21 new agreements between Members, bringing the total number of WIPO Re:Search agreements to 98. These 98 collaborations span 14 diseases. Continuing the previous years' trend, malaria remains the top focus of new collaborations established in 2015 and to date. Chagas disease overtook tuberculosis as the second most common focus of new collaborations in 2015, though tuberculosis remains the second most common focus of all collaborations established to date. The other collaborations established in 2015 cover an additional six diseases, including the first collaboration involving rabies. Of the 98 collaborations established since 2012, 15 have progressed to the next stage of product development, including eight that are still active.

Drug discovery remains the primary focus of all agreements established to date. New collaborations established in 2015 are focused equally on drug discovery and basic research, with each making up 38% of the total. The most commonly shared asset continues to be compounds for drug screening projects.

Throughout the year, BVGH continued to catalyze new collaborations and present new partnership opportunities to Members. In addition to the collaborations established, by the end of 2015, ten new projects were in early-stage discussions between Members and seven projects were in advanced negotiations.

Thirty-three of the seventy-seven agreements established between 2012 and 2014 are still active. Forty-four of the seventy-seven have come to a conclusion. In addition to establishing new agreements, BVGH continues to monitor and track the status of all WIPO Re:Search collaborations and provide project support and alliance management to ongoing collaborative projects. BVGH captures collaborations' statuses in the collaboration pipeline chart, which can be viewed on pages 6-7 of this report.

BVGH's objective was to establish 20 new agreements between Members in 2015. Twenty-one were established over the year.

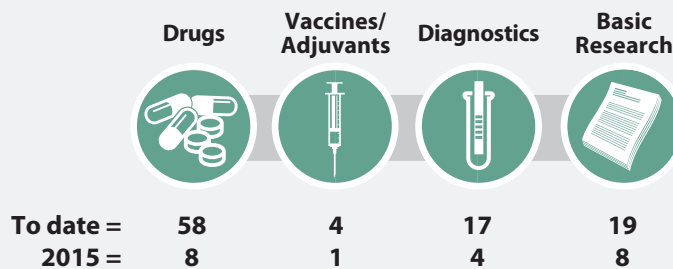
Research agreements

Collaborations

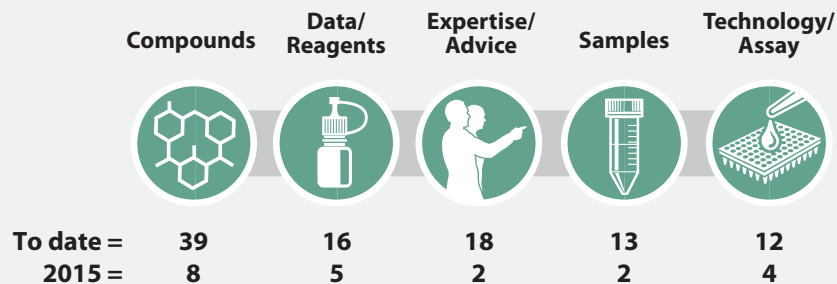


To date = 98
2015 = 21

Collaborations by Product



Collaborations by Resource Shared



Each Member has unique assets and projects that are essential to advancing neglected infectious disease product development. BVGH continues to engage Members – including those that have not yet participated in a collaboration – and propose new collaboration ideas. By the end of 2015, ten Members had initiated a WIPO Re:Search collaboration for the first time. A total of 59 of the 82 User and Provider Members have participated in WIPO Re:Search collaborations since the Consortium was launched.

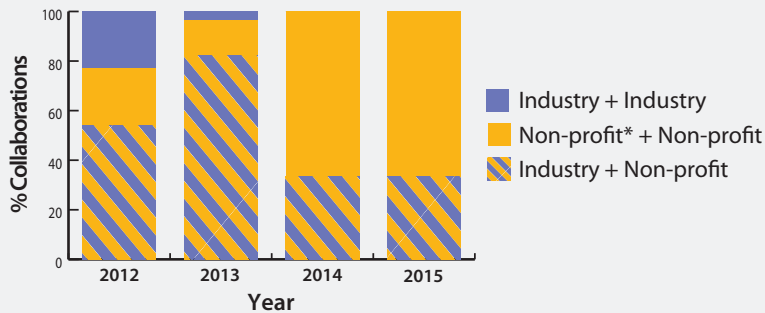
As with 2014, the majority of collaborations established in 2015 involve nonprofit/academic Members. Of these nonprofit/academic collaborations, 13 involve collaborators from different countries, including eight collaborations between developed and developing country Members. Since 2012, Members from 19 countries have participated in WIPO Re:Search collaborations.



2015
Partnering Objectives
and Achievements

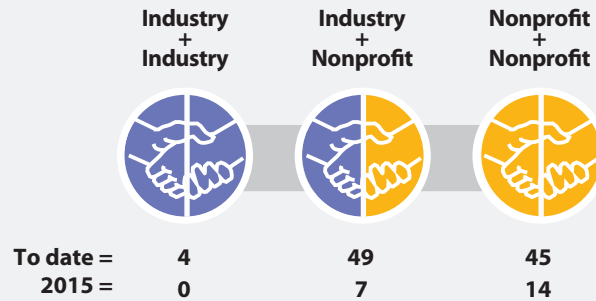
Partnering across the globe

Collaboration Trends by Sector

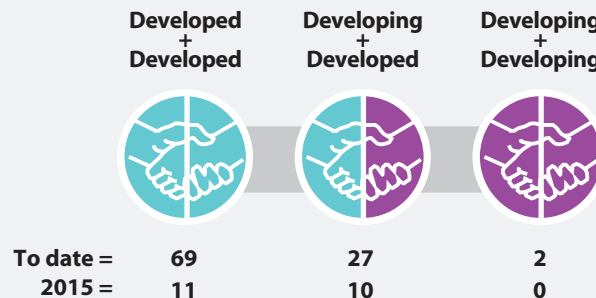


*Includes all not-for-profit Members

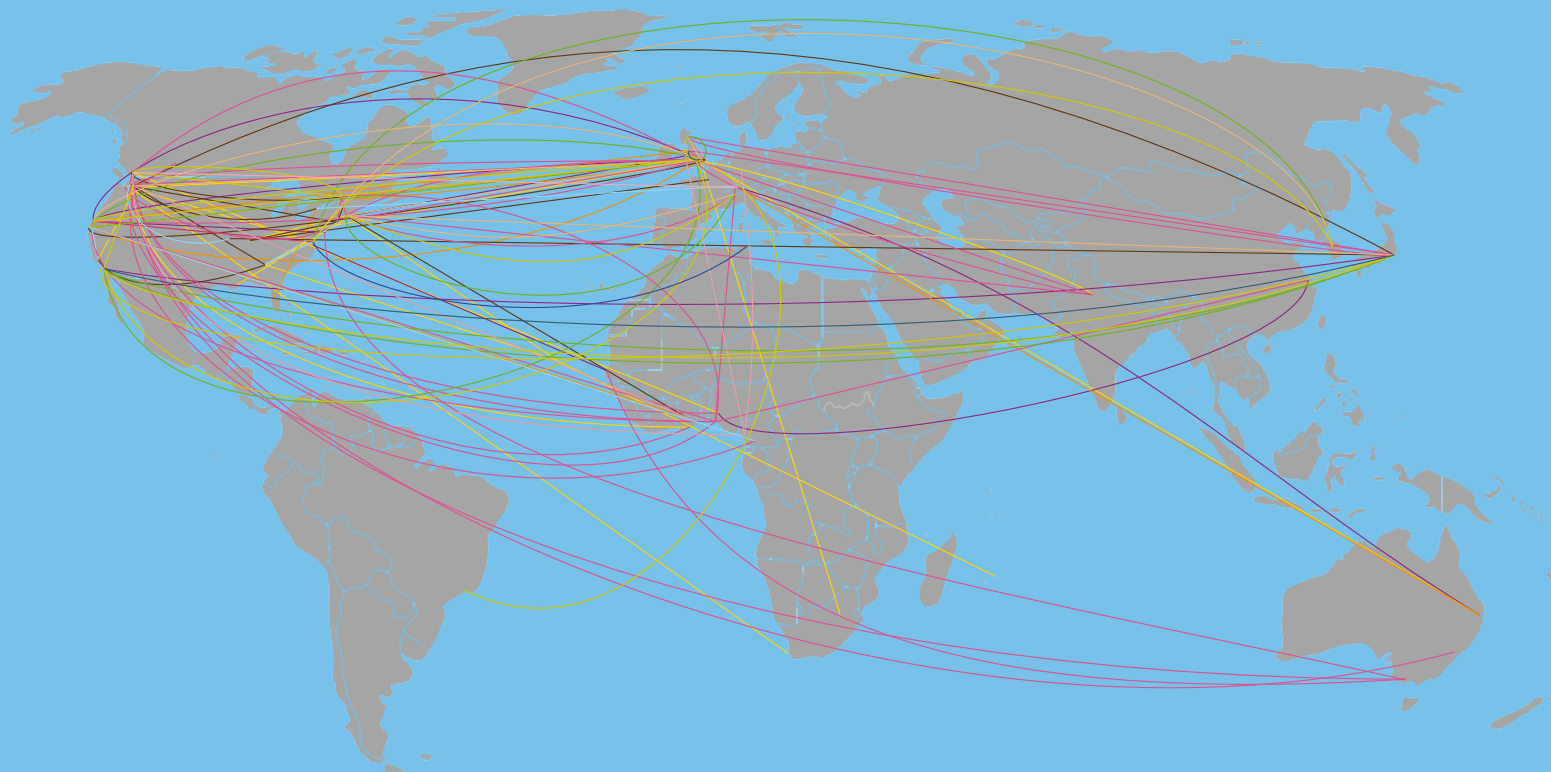
Collaborations by Sector



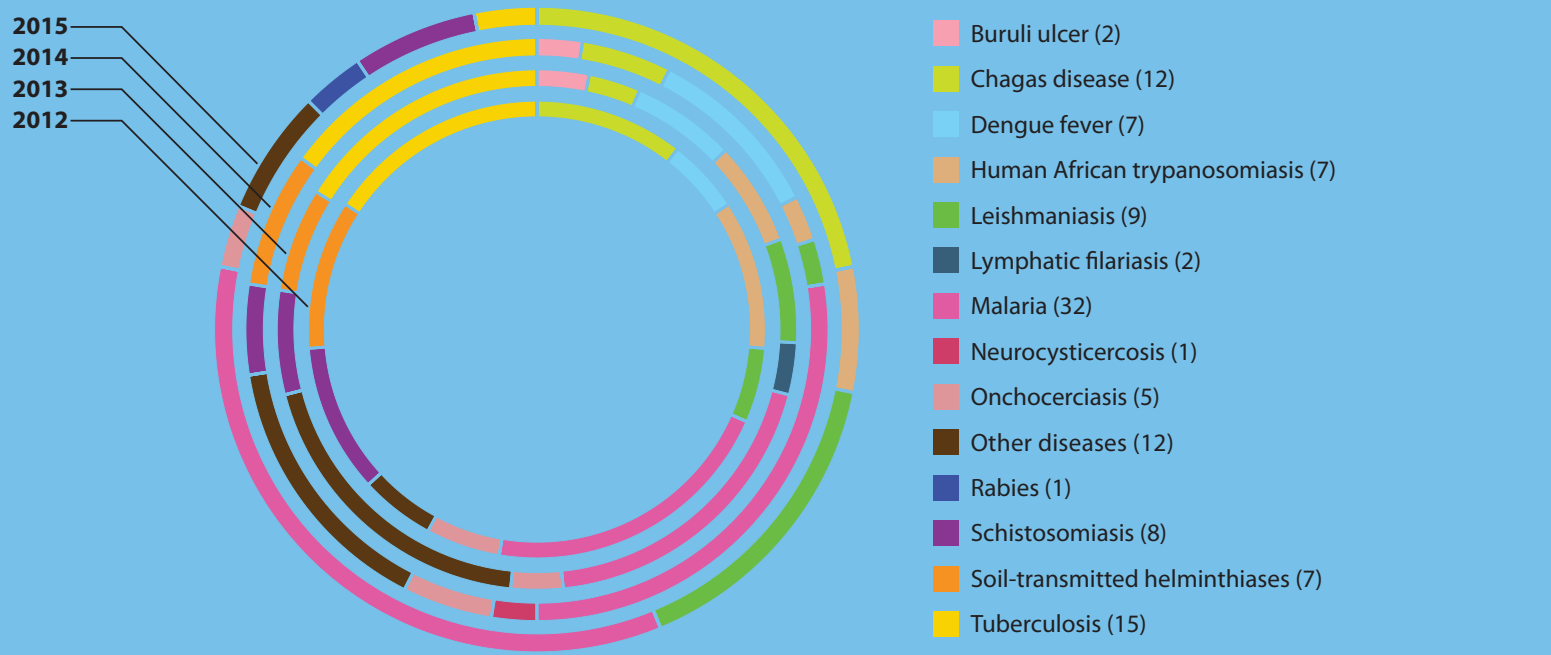
Collaborations by Geography



Collaboration Map

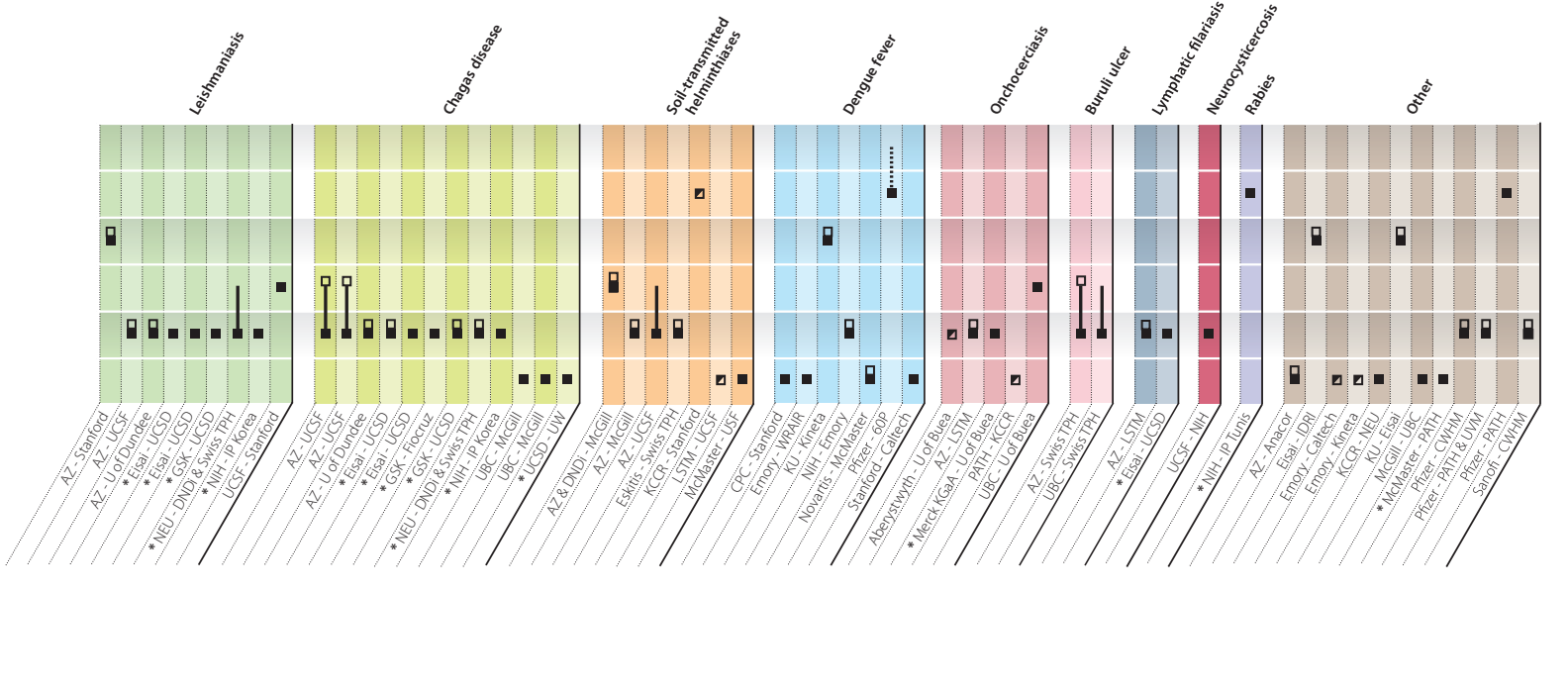
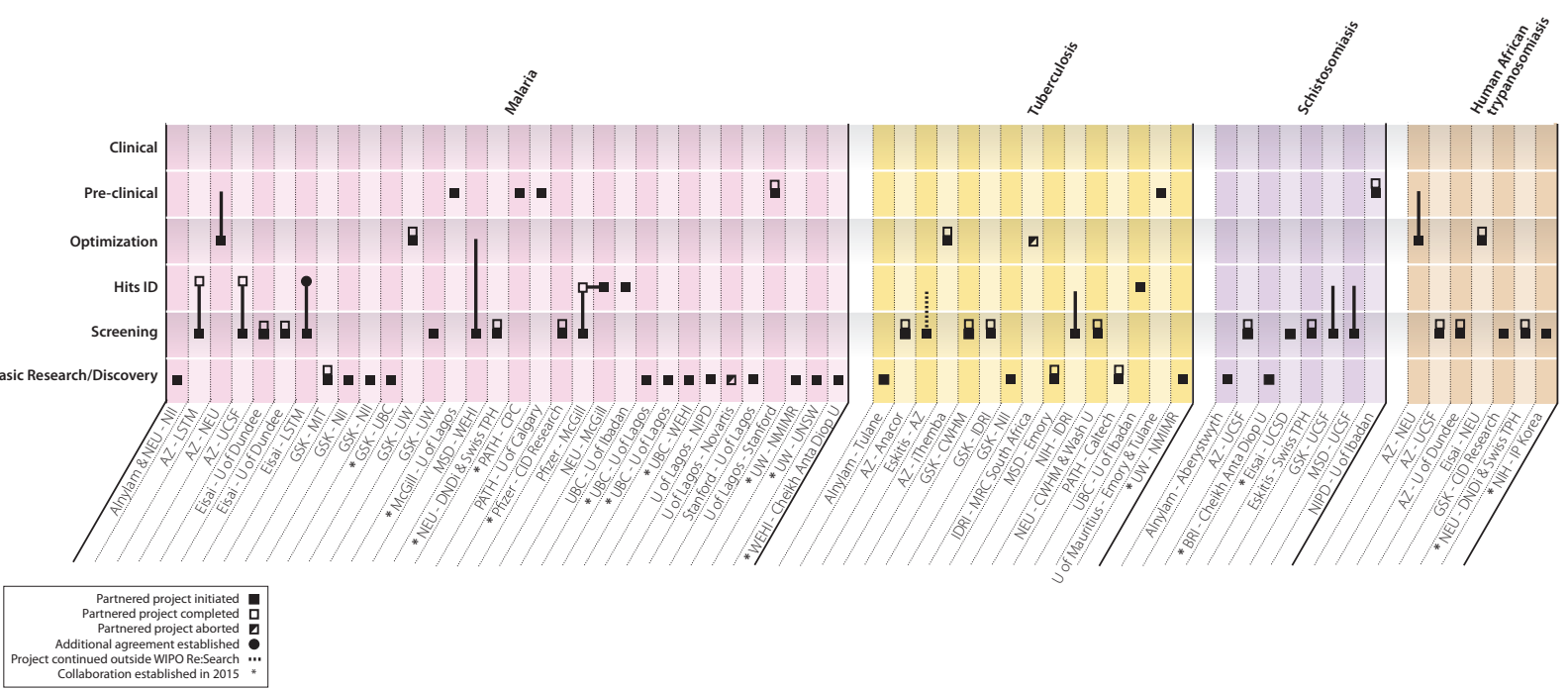


Collaborations by Disease



WIPO Re:Search Collaboration – Eisai: Eisai provided researchers at the University of California, San Diego (UCSD) with a squalene synthase inhibitor to test against *Leishmania* and *T. cruzi*, either alone or in combination with a novel CYP51 inhibitor.

Collaboration Pipeline



■ Partnered project initiated
 ■ Partnered project completed
 ■ Partnered project aborted
 ● Additional agreement established
 ● Project continued outside WIPO Re:Search
 * Collaboration established in 2015

Member highlights

Since the Consortium was launched in 2011, numerous researchers have participated in WIPO Re:Search collaborations. These participants have begun presenting their findings at conferences and publishing their data in peer-reviewed journals.

Member Publications and Presentations:

- **GSK + UCSF:** "Structure-Bioactivity Relationship for Benzimidazole Thiophene Inhibitors of Polo-Like Kinase 1 (PLK1), a Potential Drug Target in *Schistosoma mansoni*", *PLoS Negl. Trop. Dis.*, 2016.
- **PATH + U of Calgary:** "Evaluation of Non-Instrumented Nucleic Acid Amplification by Loop-Mediated Isothermal Amplification (NINA-LAMP) for the Diagnosis of Malaria in Northwest Ethiopia", *Malaria Journal*, 2015.
- **Pfizer, Sanofi + CWHM:** "Pharmacologic Evaluation of Clinical Neutral Endopeptidase Inhibitors in a Rat Model of Acute Secretory Diarrhea", Digestive Disease Week 2015.
- **Stanford + U of Lagos:** "Molecular Testing for *Plasmodium falciparum* using Serum or Plasma and Comparison with Microscopy and Rapid Diagnostic Testing in Febrile Nigerian Patients", *J. Clin. Microbiol.*, 2015.
- **UBC + Swiss TPH:** "Selamectin is the Avermectin with the Best Potential for Buruli Ulcer Treatment", *PLoS Negl. Trop. Dis.*, 2015.



Dr. Benjamin Pinsky, Stanford University (left), and Dr. Wellington Oyibo, University of Lagos (right), discuss the results of their collaboration and their publication plans.



Dr. Justin Boddey, Walter and Eliza Hall Institute of Medical Research (WEHI) (far right), gave a seminar on the biology of malaria at MSD. During his visit, the team discussed recent WEHI data and next steps of the collaboration.

WIPO Re:Search Collaboration – Alnylam: Alnylam provided an Aberystwyth University researcher with lipophilic *in vivo* siRNA delivery reagents and designed a set of optimized siRNAs to support the researcher's schistosomiasis studies.

Creating connections

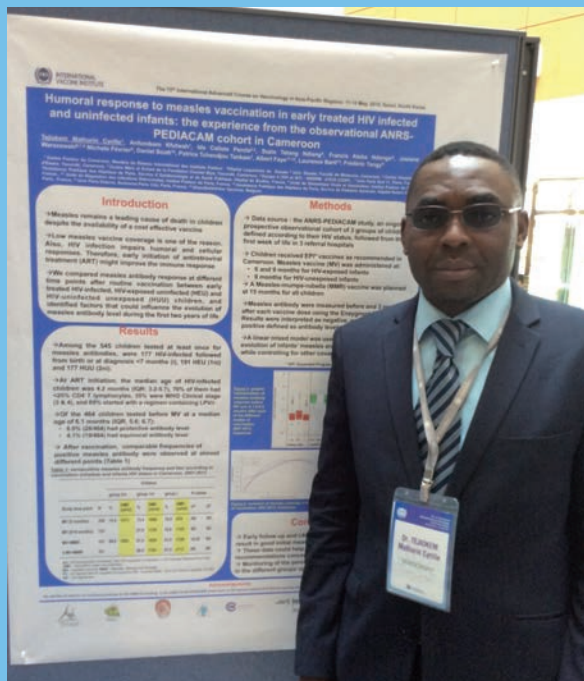
In addition to its communications, recruiting, and partnering activities, BVGH helped Members obtain funding for their research projects. BVGH also identified travel awards, suggested conferences, and assisted African researchers with the preparation of travel award applications.

Conferences and Awards:

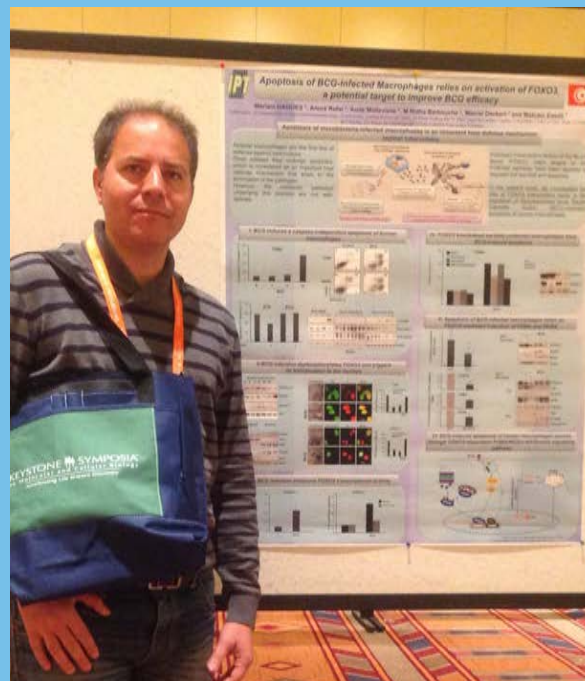
- Two scientists from the Noguchi Memorial Institute for Medical Research (NMIMR) received travel awards and attended a kinetoplastid drug discovery course in São Paulo, Brazil.
- A researcher from the Centre Pasteur du Cameroun received an award to attend an International Vaccine Institute (IVI) vaccinology course in Seoul, Republic of Korea.
- An African Institute of Biomedical Science & Technology (AiBST) researcher received a travel award to attend a Keystone conference on co-infections in Ouro Preto, Brazil.
- A researcher from the Institute Pasteur de Tunis received a travel award to attend a Keystone tuberculosis conference in Santa Fe, USA.

Research and Funding:

- BVGH informed University of California, San Diego (UCSD) researchers about Sanofi's cathepsin inhibitor contribution to the US National Institutes of Health (NIH) National Center for Advancing Translational Sciences (NCATS) program.
 - The researcher was awarded funding and access to the compound by the NIH.
- BVGH recommended the Wellcome Trust Pathfinder Award to support MSD's collaboration with researchers from the Walter and Eliza Hall Institute of Medical Research (WEHI).
 - The two organizations received the funding award.
- BVGH informed researchers from Merck KGaA, Darmstadt, Germany and the University of Buea about the Wellcome Trust Pathfinder Award and assisted with the preparation of their application.
 - The two organizations received the funding award.



Dr. Mathurin Tejiokem, Centre Pasteur du Cameroun, presented a poster at the 15th Annual International Vaccine Institute (IVI) International Advanced Course on Vaccinology.



Dr. Makram Essafi, Institut Pasteur de Tunis, presented a poster at the Keystone Symposium: Host Response in Tuberculosis.

WIPO Re:Search Collaboration – Merck KGaA, Darmstadt, Germany: Merck KGaA, Darmstadt, Germany provided a University of Buea researcher with a set of Hsp90 inhibitors to screen against *Onchocerca* and *Loa loa*.



Recruitment Objectives and Achievements

2015

A membership composed of research organizations from different sectors and geographies ensures not only a diversity of collaborations, but also a variety of expertise, ideas, and capacities all directed toward the development of products for neglected infectious diseases. To build on the Consortium's diversity, BVGH recruited six new, "targeted" academic, government, and nonprofit User Members in 2015.

As the number of User Members expands, the need for more company Provider Members with compound libraries, data, and product development expertise grows. In 2015 BVGH recruited two new pharmaceutical company Funding & Provider Members – Takeda and Janssen – to the Consortium. Besides a desire to help advance others' neglected infectious disease research, these companies both have internal global health programs. In addition to joining as Provider Members, both companies also joined WIPO Re:Search as User Members.

BVGH recruited a total of eight "targeted" User Members in 2015. Two Supporter Members also joined WIPO Re:Search, bringing the total number of Members to 101 in 2015. WIPO Re:Search membership now covers six continents and 27 countries.

BVGH achieved its 2015 goal of recruiting eight "targeted" User Members and two Funding Members.

New Members

- Bibliotheca Alexandrina*
- ■ Cheikh Anta Diop University*
- ■ Guangzhou Institutes of Biomedicine and Health, Chinese Academy of Sciences*
- ■ Icahn School of Medicine at Mount Sinai
- ■ Institut Pasteur***
- ■ Janssen, the Pharmaceutical Companies of Johnson & Johnson**
- ■ Medical Research Institute, Alexandria University*
- Operation ASHA*
- ■ Takeda Pharmaceutical Company, Ltd.**
- ■ University of Bamenda*

* Developing world institution

** Funding Member

*** Recruited by BVGH and WIPO

■ Provider ■ User ■ Supporter

WIPO Re:Search Collaboration – GlaxoSmithKline (GSK): GSK provided a researcher from Fundação Oswaldo Cruz (Fiocruz) with a targeted set of compounds from its Tres Cantos Anti-Kinetoplastid Set (TCAKS) to assess the compounds' effects on *T. cruzi*.



Communication Objectives and Achievements

2015

Publicizing and raising awareness of the activities and achievements of WIPO Re:Search remains one of BVGH's priorities and key responsibilities. Through the monthly *Snapshot* newsletter, BVGH continues to feature new collaborations, announce new Members, and highlight Members' contributions to the WIPO Re:Search Database. Members are encouraged to provide feedback to BVGH on the newsletter's content, which has resulted in a new section being added. Access to funding is a recognized barrier to all biomedical research. The new *Snapshot* section, "BVGH FundFinder Featured Funding Announcement," presents a different funding award relevant to neglected infectious disease research each month. *Snapshot* readership continued to grow throughout 2015. By the end of the year, 1,400 individuals from 274 organizations and 38 countries received the monthly newsletter.

BVGH also continues to engage global health and industry audiences at national and international conferences and events. In 2015 BVGH presented WIPO Re:Search at seven meetings and represented the Consortium at an additional six.

BVGH is increasing its social media coverage of WIPO Re:Search through Twitter.

Conference attendance & presentation

Neglected Disease Conferences:

- 7th Annual Center for Emerging & Neglected Diseases (CEND) Symposium, Berkeley, USA**
- 2015 Seattle Parasitology Conference, Seattle, USA
- American Society of Tropical Medicine & Hygiene (ASTMH) 64th Annual Meeting, Philadelphia, USA

Global Public Health and Industry Conferences:

- ANDI: Consultation on Transforming Healthcare in Africa Using Technology, Addis Ababa, Ethiopia*
- 2015 Global Fungal Infection Forum, Seattle, USA
- 6th Annual Consortium of Universities for Global Health (CUGH) Conference, Boston, USA**
- 2015 Milken Institute Global Conference, Los Angeles, USA
- 2015 Biotechnology Innovation Organization (BIO) International Convention, Philadelphia, USA
- 11th Annual Biotechnology Entrepreneurship Boot Camp, 2015 BIO International Convention, Philadelphia, USA*
- Forum 2015: COHRED Global Forum on Research and Innovation for Health, Manila, Philippines*
- Novartis Access Launch - Wellbeing for All: Innovation for Society's Biggest Health Challenges, New York, USA
- 2015 American Association of Pharmaceutical Scientists (AAPS) Annual Meeting and Exposition, Orlando, USA*
- 5th ANDI Stakeholder Meeting, Nairobi, Kenya*

* Talk/panel session ** Poster presentation

WIPO Re:Search Collaboration – MSD: MSD provided researchers at the Walter and Eliza Hall Institute of Medical Research (WEHI) with small molecule aspartyl protease inhibitors to screen against *P. falciparum*.

BVGH produced its second biennial WIPO Re:Search storybook, *Accelerating R&D for Neglected Diseases through Global Collaborations: WIPO Re:Search Partnership Stories 2013-2015*, which featured 25 collaborations. The storybook was announced by press release, which was picked up by 148 media and news outlets. Hardcopies – accompanied by a letter from BVGH President, Jennifer Dent, and WIPO Director General, Dr. Francis Gurry, which encouraged participation in WIPO Re:Search – were widely distributed. The storybook included a message from Dr. Francis Collins, Director, US National Institutes of Health (NIH) and a letter from James Greenwood, President & CEO, Biotechnology Innovation Organization (BIO) and BVGH Board of Directors Chairman.

In addition to the storybook, BVGH published two articles in peer-reviewed journals, co-authored a *WIPO Global Challenges Brief*, and contributed to a special interview on drug discovery models.

2015

Communication Objectives
and Achievements

Communication



“Repurposing Pharma Assets: An Accelerated Mechanism for Strengthening the Schistosomiasis Drug Development Pipeline”

Future Medicinal Chemistry

Featured collaborations:

- MSD + UCSF: statins for schistosomiasis



“Open Innovation to Bolster Research and Development for Neglected and Emerging Infectious Diseases”

Journal of Medicines Development Sciences

Featured collaborations:

- MSD + WEHI: inhibitor set for malaria
- UBC + Swiss TPH: tuberculocidal compounds for Buruli ulcer
- GSK + CWHM: inhibitor data for tuberculosis
- NIH + IP Tunis: rabies vaccine formulation
- PATH + CPC: diagnostic for malaria



“WIPO Re:Search: Sharing Innovation in the Fight Against Neglected Tropical Diseases”

WIPO Global Challenges Brief

Featured collaborations:

- GSK + CWHM: inhibitor data for tuberculosis
- MSD + UCSF: statins for schistosomiasis
- Novartis + U of Buea: hosting of onchocerciasis researcher
- Novartis + U of Lagos: hosting of malaria researcher
- U of Ibadan + NIPD: schistosomiasis diagnostic
- UBC + U of Ibadan: structure elucidation of natural products
- U of Lagos + Stanford: hosting of diagnostic developer
- Stanford + U of Lagos: hosting of malaria researcher




“Accelerating R&D for Neglected Diseases through Global Collaborations: WIPO Re:Search Partnership Stories 2013-2015”

Describes 25 WIPO Re:Search collaborations

Featured remarks from:

- Dr. Francis Gurry, Director General, WIPO
- Mr. James Greenwood, President & CEO, BIO
- Dr. Francis Collins, Director, US NIH



BVGH surveyed Members in 2015 to obtain feedback on its partnering approach and communications and reports, as well as overall Member satisfaction. Members were also asked to provide suggestions to improve WIPO Re:Search and to describe their vision for the Consortium.

BVGH developed customized surveys for Funding Members, User and Provider Members, and Supporter Members. These surveys were distributed to 700 individuals from User and Provider Member organizations, 56 individuals from Supporter Members, and the main points of contact within each Funding Member. BVGH received a total of 43 responses. The feedback was resoundingly positive – Members answered that they found BVGH’s reports and publications useful, and BVGH’s proactive partnering approach effective and meaningful. Members encouraged greater involvement of global health groups and recommended that basic research activities should be supported. Respondents also noted that more opportunities to partner with Funding Members was desired, and more effort should be focused on engaging developing country Members.

2015
Member Survey

Survey results

- Members responded that WIPO Re:Search meets their expectations for partnering, recruiting, and communications.
- Respondents described the *Snapshot*, Storybook, Mid-Year Report, and Annual Report as useful.
- The majority of respondents had entered into a collaboration, which they described as beneficial to their research.
- BVGH's proactive partnering approach was described as effective and meaningful to Members.
- Survey respondents prefer BVGH's proactive partnering outreach.
- Members noted the following as common barriers to research in general:
 - Lack of funding
 - Limited access to technology/reagents
 - Unavailability of collaborators
- Survey respondents recommended that WIPO Re:Search focus on the following activities:
 - Building more collaborations
 - Providing grants/funding support
 - Building capacity through North-South collaborations
 - Support basic research projects
- Additional comments provided by Members:
 - Respondents desire more opportunities to partner with Funding Members.
 - Members recommend that more collaborations involve developing country Members.
 - Survey respondents noted that BVGH's recruiting efforts should continue to focus on quality rather than quantity of new Members.

WIPO Re:Search Collaboration – Novartis: Novartis provided a McMaster University researcher with a polyclonal anti-dengue virus antibody.

BVGH met all program objectives in 2015:

- Established 21 new agreements
- Recruited eight new “targeted” User Members
- Recruited two new Funding Members
- Continued communication activities
- Conducted Member Survey

BVGH objectives and deliverables for 2016 include:

- Establish 12 new agreements
- Continue to support current partnerships
- Recruit four new User Members
- Continue activities to increase awareness of WIPO Re:Search:
 - Monthly *Snapshot* newsletter
 - 2016 *Mid-Year Report*
 - 2016 *Annual Report*
 - Attend two key conferences



2015 and 2016 Conclusions and Objectives

WIPO Re:Search Collaboration - Sanofi:
Sanofi provided researchers at the Center for
World Health & Medicine (CWHM) with neutral
endopeptidase inhibitors to test in a rat diarrheal
model.



Developed in cooperation with our Sponsors:



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