

The Institute for Cancer Research

Research Development Report

Reporting Period:

July 1, 2013 – June 30, 2014

Commercial Development of Research

The Office of Research & Development Alliances (ORDA) supports the mission of The Institute for Cancer Research (ICR) at Fox Chase Cancer Center (FCCC) to accelerate the integration of emerging technologies into team-based science to reduce the burden of cancer in all individuals *by facilitating relationships with industry in order to translate clinical and basic research findings into products and services for the public good.* By evaluating and protecting the intellectual assets of ICR/FCCC, and managing discussions and negotiations with industry, the ORDA enables the effective and efficient transfer of those assets for the benefit of the public and provides a source of revenue to fund further research and to reward, retain and recruit ICR/FCCC investigators.

The ORDA serves as the liaison between ICR/FCCC's research community and the pharmaceutical, biotechnological, medical device, diagnostic and venture capital communities. The ORDA continues a long standing policy and tradition at ICR/FCCC to develop and nurture these collaborations to disseminate intellectual capital for the public benefit. This policy was enhanced when the US Congress sought to incentivize more translation of scientific findings through passage of the 1980 Bayh-Dole Act. That legislation created a uniform patent policy among federal agencies that fund research, enabling small businesses and non-profit organizations, including universities, to retain title to inventions made under federally-funded research programs.

Generally, the ORDA provides three primary services:

(1) The promotion of collaborative research relationships between corporate partners and ICR/FCCC's academic investigators. ICR/FCCC has long been recognized as a leader in both clinical research and basic laboratory research. Corporate sponsorship enables early-stage research and technologies to be further developed into pre-clinical and, ultimately, clinical applications, thus promoting academic, clinical and corporate goals. The ORDA is the primary point of contact for establishing industry-sponsored research agreements (SRAs) and clinical trial agreements (CTAs) at ICR/FCCC. We facilitate the development, negotiation and execution of all SRAs and CTAs within ICR/FCCC and we work to ensure compliance under all such agreements. Acting as the liaison between ICR/FCCC, its investigators, and corporate sponsors, the ORDA also consults with other internal departments as necessary while negotiating SRAs and CTAs. Further, the ORDA ensures that all such agreements are consistent with the ICR/FCCC's Intellectual Property Policies and Procedures Policy and Conflict of Interest Policy, as well as appropriate federal regulations and guidelines. The ORDA also negotiates and

manages material transfer agreements and other collaborative agreements with industry on behalf of ICR/FCCC Investigators. Additionally, the ORDA is charged with development of financial and operational evaluations of proposed technology/equipment to foster the clinical and research programs of technology-intensive departments. The ORDA is responsible for making recommendations for technology acquisitions, directing a competitive bidding process and closing negotiations for equipment purchases, in conjunction with Finance and Purchasing.

(2) The collection and processing of invention disclosures while working with the inventors to file patent applications when appropriate. The ORDA works with ICR/FCCC investigators, staff and outside intellectual property law firms to protect intellectual property (IP) that results from activities carried out on ICR/FCCC time, at ICR/FCCC expense, using ICR/FCCC facilities or materials, or under the auspices of ICR/FCCC. All such IP is protected through patents, copyrights and/or trademarks. In the case of patents, the ORDA works closely with outside IP law firms to evaluate the patentability of invention disclosures, and to draft and file patent applications in the United States and internationally, if appropriate. In addition, the ORDA works with outside counsel to ensure protection of copyrightable materials, secure trademarks, and to protect original artistic or literary work of ICR/FCCC investigators and staff.

(3) The facilitation of transferring patentable and non-patentable intellectual property, know-how and trade secret technologies to industry through exclusive and non-exclusive licenses, option agreements and the formation of start-up companies. The ORDA identifies discoveries that may be commercially developed, and works with inventors and corporate partners to launch new products into the marketplace. The ORDA strategically markets ICR/FCCC's intellectual property portfolio, including patented materials, non-patented research materials and software by working with inventors and using the ORDA's extensive network of corporate contacts to partner with companies that are capable of developing our technologies. The ORDA negotiates all option and license agreements to suitable partners in an attempt to introduce technologies into the marketplace as quickly as possible. As an element of this partnership and as part of a license agreement for our technologies, companies oftentimes support additional research within ICR/FCCC laboratories to further develop the licensed technologies.

Outlined below are the actions and strategies that are implemented by the ORDA to increase commercialization activities and the speed of commercial development.

- The ORDA meets regularly with each current principal investigator and each recently hired investigator to become familiar with the aims of the investigator's research projects. The ORDA staff reminds investigators to disclose results of their research to the ORDA prior to any publications or presentations outside of ICR/FCCC. ORDA staff also attends internal seminars presented by the investigators in order to benefit from the perspective offered by other researchers in the audience.
- After research results are formally disclosed to the ORDA using an Invention Disclosure Form, the staff performs a thorough scientific and commercial evaluation of the technology. These evaluations include assessment of novelty, utility, unobviousness, stage of development, the problem addressed, and the size and growth rate of the market. Feedback is then solicited from appropriate industry contacts on the level of interest from existing

companies. In the event that ORDA staff determines that the disclosure might form the basis of a new company, efforts are directed towards finding an entrepreneur to lead the company and secure proof-of-concept funding. The assessment also recommends the best means of protecting the discovery in order to maximize its commercial potential and benefit to the citizens of Pennsylvania.

- When it is determined that a patent application should be filed, a patent attorney whose background and experience would allow them to appreciate the technology will be asked to prepare an application with input from the researcher and the ORDA. The ORDA solely contracts with law firms having attorneys with advanced scientific degrees in field similar to the intellectual property being protected.
- If it is determined that a license to an existing company is the most appropriate route of commercialization, a marketing campaign will be undertaken using the means of contact described in “Outreach to Businesses Regarding Recent Research Developments” below. Particular attention is paid to making small businesses in Pennsylvania aware of the discoveries and the opportunities they present.
- If it is determined that the technology would benefit from further research at ICR/FCCC to establish proof of principle, an application will be submitted to BioAdvance for review and potential investment. Additionally, ICR/FCCC has a rich history of making investments in its research programs to help support its investigators conduct applied research, particularly when such support cannot be obtained from conventional funding sources or federal agencies.
- In FY14, ICR/FCCC recorded 17 invention disclosures, filed 16 patent applications and was awarded 9 US patents. In addition, over \$1 million in gross revenues were generated during FY14 from payments under its license agreements. In FY14, ICR/FCCC executed 15 laboratory sponsored research agreements (including amendments) that lead to ~\$1.7 million in pre-clinical research support, 138 material transfer agreements, 73 confidentiality agreements and 68 clinical trial agreements with industry.

Research Licensing Agreements

The ORDA at ICR/FCCC has developed the following standard licensing agreements for use in the licensing of research results related to medical devices, drugs or other research discoveries:

1. License Agreement
2. Option Agreement
3. Research Materials License Agreement
4. Software Transfer Agreement
5. Material Transfer Agreement
6. Confidential Disclosure Agreement
7. Sponsored Research Agreement
8. Corporate-sponsored Clinical Trial Agreement

Training Students and Health Professionals

- FCCC laboratories provide opportunities for scientific training for undergraduate students. During Summer 2014, ten students from a variety of colleges, including University of Pittsburgh, Duke, Lycoming, Harvard, Villanova, and Penn State, were recipients of the highly competitive Fox Chase Cancer Center Undergraduate Summer Fellowships. An additional twenty undergraduate summer assistants were supported from investigators' research funds.
- We have a well-established academic relationship with Lincoln University, a Historically Black College/University, for the training of both faculty and undergraduate students in Biology; this partnership was supported by a P20 grant from the NIH (NIH P20 CA138079, Lincoln University - Fox Chase Partnership in Cancer Research and Training), and recently continued as part of grant awarded to a Medical Oncologist to support 2 Lincoln University students interested in careers in medicine. A total of 23 students were trained in this partnership, and three research projects were initiated as a result of pilot project funds. Lincoln and Fox Chase continue to pursue a relationship through additional funding mechanisms to continue this important pipeline of under-represented minorities with interests in science and medicine.
- Graduate students at FCCC carry out thesis research under the supervision of staff members who hold adjunct faculty appointments at Drexel University College of Medicine, the University of Pennsylvania, Thomas Jefferson University, Temple University, and members who participate in the Fox Chase-Russian State Medical University (RSMU) Sister Institute Program. Generally, these students have completed the major course work requirement for the doctoral degree and are engaged in full-time research. In 2014, over 30 graduate students are on campus, and are supported by 24 individual laboratories. All of these students are supported by investigators' research funds.
- Training in the Ethical Conduct of Research is provided twice per year to members of the postdoctoral and graduate student community at ICR/FCCC; this series is organized by Dr. Glenn Rall, Director of the Postdoctoral Research Program. In the Fall component of this course (10/2013) the topics included Scientific Integrity, Bioethics in the Use of Animals and Humans in Research, and Peer Counseling for Issues Related to Data Preparation. In the recent Spring component of this course (5/2014), the topics included a discussion of allocation of scarce resources, data ownership, and laboratory dynamics as it pertains to ethical decision-making. Both of these 4-hour sessions are required for all postdoctoral and graduate trainees at the Center; attendance is taken at each meeting. Faculty mediators for the program include Drs. Glenn Rall, Matt Robinson, David Wiest, Carolyn Fang, Alana O'Reilly, Jeffrey Peterson and Siddharth Balachandran. This course is highly interactive and routinely accompanied by extensive discussion. Fellows and students receive certificates of completion after they attend both components of this course.
- Approximately eighty postdoctoral fellows and twenty graduate students actively participate in research at the Institute for Cancer Research/Fox Chase Cancer Center. At our 19th Annual Postdoctoral and Graduate Student Research Conference, ten postdoctoral fellows

presented their work as an oral presentation and another forty-five fellows presented their work in poster sessions. The Keynote Speaker for this event was Dr. Patrick Moore (University of Pittsburgh), who spoke on viruses that cause cancer, and approaches to detect them. The program for this day was arranged by Drs. Zeng-Jie Yang and Glenn Rall, along with a committee of 13 postdoctoral fellows who helped to select the speakers, solicit funding, and organize the event. The annual Postdoctoral and Graduate Student Research Day is open to all postdoctoral fellows in the Philadelphia region. Individuals are invited by distribution of program information on the FCCC home page, and by direct mailings to area Universities, including Thomas Jefferson University, Princeton University, Drexel University, Temple University, and Lincoln University.

- **Grant Writing Course:** Twelve postdoctoral fellows participated in a 6-week rigorous grant-writing course, offered in Fall 2013 by Drs. Glenn Rall, Luis Sigal, David Wiest and Sid Balachandran (the same group of four investigators taught this course last year, and willingly volunteered for a second year). Participants each write individual components of a grant application (Specific Aims page, Introduction, Preliminary Data, and Research Plan) and provide critiques of each other's work, based upon the "Five Principles of Good Grant Writing" by Gopen and Swan, taught in the first two lectures. All students also receive critiques from at least two of the faculty preceptors. Informal reviews after the 2013 course were uniformly positive.
- **ICR/FCCC Cancer Center** maintains several active programs for graduate training of physicians. The activities of these programs range from preceptorships for medical students through research fellowships. Residents from Temple University School of Medicine also rotate at the Center, along with residents from other regional institutions.
- Specifically, the Institute offers the following fellowships on an ongoing basis:
 - **Breast Cancer** - The one-year Breast Fellowship Program accepts one (1) trainee annually and accepted its first Fellow in 2004. The program is designed to prepare the trainee for a leadership role in multidisciplinary breast care in an academic or community setting. Trainees participate in a multidisciplinary breast evaluation clinic and rotate on breast surgery, medical oncology, radiation oncology, pathology, radiology, and reconstructive surgery.
 - **Hematology-Oncology** - The Department of Medical Oncology offers a three-year fellowship for internists who have completed an approved residency program. The fellowship combines the resources of Temple University Hospital and Fox Chase Cancer Center. This combined hematology/oncology fellowship is certified by the American Board of Internal Medicine and the Accreditation Council for Graduate Medical Education. Each year up to six new trainees are accepted into the Program.
 - **Pathology** - The fellowship program is designed to provide in depth experience in the pathology of tumors. At FCCC, the fellows are exposed to the specialized pathology of tumors and cancer related conditions. The primary experience of the fellows is in the hands-on day-to-day dealing with surgical material, including institutional

consultation cases. Ample time for scholarly activities is facilitated by two full time pathologists' assistants who handle gross room activities including frozen section preparation.

- Surgical Oncology - The Department of Surgical Oncology offers a two-year fellowship for surgeons who have completed an approved residency program. The fellowship has been in existence since 1986 and was certified by the Society of Surgical Oncology in 1991. Approximately 70% of graduates now occupy academic positions. Each year three fellows are accepted through the SSO Matching Program for a two-year program with an option to extend one or two additional years in research upon completion.
- Advanced Minimally Invasive Thoracic Surgery - The Division of Thoracic Surgical Oncology offers a one (or two)-year fellowship in general thoracic surgical oncology with a heavy emphasis on minimally invasive approaches. This program emphasizes the multidisciplinary approach to modern cancer therapy in the setting of a leading freestanding cancer hospital.
- Urologic Oncology - The Section of Urologic Oncology offers a two-year fellowship for urologists who have completed a general urology residency program. Fox Chase Cancer Center has offered post-graduate surgical training since 1986. In 2006, the Center initiated this multidisciplinary fellowship in urologic oncology, which was recognized and approved by the Society of Urologic Oncology in 2008. The goal of the program is to provide comprehensive training in the management of all aspects of urologic oncology, covering fully the diagnosis, evaluation and treatment of all types of genitourinary (GU) cancer.
- In 1998, Fox Chase Cancer Center embarked on a novel partnership with the Russian State Medical University (RSMU) in Moscow to provide training at our Center for RSMU Masters and Ph.D. level students. This partnership, originally conceived by Erica Golemis at Fox Chase and Olga Favorova, Professor of Molecular Biology at RSMU, has provided internship opportunities for >50 RSMU students over these past fifteen years of active collaboration. With each passing year, the program has expanded to include not only more students, but also more affiliations with premier Russian research institutions. Despite the growing number of sister institutions, the matching and oversight processes are essentially the same: enthusiastic and talented students are selected by professors at the Russian institute; these students then select potential mentors at our Center based on common research interests. Final matches are made by the Supervisory Committee at Fox Chase. Students typically intern at Fox Chase for approximately 15 months, although a number of them have elected to continue their studies and pursue their Ph.D. research in the host laboratory. Soon after the students' arrival at Fox Chase, an Advisory Committee is formed for each student, consisting of their mentor and at least two other faculty members with similar research interests. These committees meet with the student twice a year to provide research guidance and to afford the student an opportunity to present their work throughout the internship. Each Advisory committee reports back to the Supervisory Committee. The success of the initial Partner Program with Prof. Favorova and RSMU allowed for associations to be established with

other high quality institutions in Russia. A program sponsored by Fox Chase and Moscow Engineering Physical Institute (MEPI) provides up to two students per year an opportunity to acquire skills in bioinformatics, software design, and protein modeling. Affiliations with Smolensk State Medical Academy (SSMA) and Kazan Federal University proved to be very fruitful in the past four years, and fifteen students have already benefited from this partnership. More recently, we identified other institutions as prospective partners, including Novosibirsk and St-Petersburg State Technical Universities. Several students from these institutions are currently doing research at Fox Chase. In addition to students' training, the program provided an opportunity for several exchange visitors to work at FCCC, resulting in collaborative research publication. FCCC faculty also gives yearly classes at RSMU, as well as lectures at Kazan and St. Petersburg Universities.

Currently, nine students are working in research laboratories at Fox Chase, pursuing their Ph.D. degrees. Of the 48 students who have completed their internships, all have elected to further their education in biomedical research, and many of these students have gone on to Ph.D. programs in the U.S., Europe or Russia. Collectively, these students have contributed to over thirty peer-reviewed manuscripts, and have presented their work at multiple international meetings. We anticipate that the number of students and ICR/FCCC faculty who will benefit from this program will continue to increase.

- Several series of scientific seminars run throughout the year. Included among these is the Postdoctoral Seminar Series, run on the second Monday of every month. In this series, two postdoctoral fellows present their research to the faculty and their peers. They receive written critiques from their peers on their presentation, and immediate verbal feedback from a group of two faculty and two postdoctoral fellows. A schedule of all of the seminars at ICR/FCCC is maintained on FCCC's homepage to inform people of the subject matter, time and location of the seminars. In addition to weekly seminars from visiting guests, a number of our scientific programs hold weekly meetings which our fellows attend and in which they present their work. These include the Immunology Journal Club, the Inflammation Working Group, the Signaling group, and the Head and Neck Keystone team.
- Finally, the Postdoctoral program was the recent recipient of a \$25,000 philanthropic gift from a former postdoctoral fellow to establish a fund to support career development programs (speakers, meeting attendance, etc.). This transformational gift has greatly expanded the number and quality of career guidance and development options that we can offer to our trainees. In the first year of support from these funds, we have hosted 4 career lecturers (Drs. Michael Carleton, Joseph Grosso, Vincent Racaniello and Joanne Kamens), as well as a speaker on job hunting and resume building.

Commercial Research Development Training

- The ORDA meets individually with each new researcher that joins ICR/FCCC. During this meeting, the ORDA provides information on ICR/FCCC's Intellectual Property Policy and procedures and the services provided by the ORDA. The researcher is asked about research projects, existing relationships with industry, and avenues of inquiry being pursued that have the potential to lead to discoveries with commercial potential. This initial meeting serves to

introduce the ORDA staff to the researchers so that they are able to recognize each other by face, which greatly facilitates future informal interactions.

- ORDA staff regularly (weekly) schedules meetings with research staff to keep abreast of new developments in the laboratories. During these meetings, the ORDA advises researchers about the process of disclosing, protecting and commercializing intellectual property.
- The ORDA holds a seminar for research staff once per year, which discusses licensing and commercial development of research. Speakers are invited from outside Fox Chase and have included patent attorneys and entrepreneurs.
- Much of the investigator/inventor education takes place when a particular discovery is disclosed to the ORDA. When a new discovery is disclosed, a formal assessment of protectability and commercial potential is made, and is shared with the inventor. If it is decided that the discovery merits the investment of institutional resources to attract a commercial partner, there is an ongoing dialog with the researcher during patent filing and prosecution, as well as during the selection of companies to contact.
- The ORDA regularly presents updates to ICR/FCCC's Senior Leadership, Investment Committee and Board of Directors. These presentations inform leadership about the services provided by the ORDA and those senior administrators in turn assist the ORDA in the education of the researchers and staff. Additionally, several of ICR/FCCC board members hold executive positions in life science or venture capital firms and are helpful in recommending others among their personal networks that may be interested in hearing about research at the ICR/FCCC.
- The ORDA maintains a webpage on Fox Chase's homepage that includes a Frequently Asked Questions section and other information intended to educate staff about the commercialization of research.
- Finally, the ORDA maintains an open-door policy and provides education to researchers at every opportunity.

Outreach to Businesses Regarding Recent Research Developments

- ORDA registered Fox Chase International as a "DBA" (Doing Business As) under Fox Chase Network. Fox Chase International was created to align the skills and resources of cancer research, diagnosis and treatment resident at Fox Chase with the extraordinary growth of cancer treatment requirements internationally (*e.g.*, China). Its mission is to (1) facilitate building world class cancer treatment centers abroad; (2) attract/retain top experts at FCCC from other countries by stimulating projects in their home countries; (3) become the world's portal to the best oncology care in the US; (4) strengthen Fox Chase's current international relationships and develop new affiliations. Fox Chase International was established as non-profit to bring our full corporate strength and to allow for formation of for-profit vehicles when appropriate.

- In FY14, Fox Chase International continued its relationships and affiliations with the following institutions in China Benxi Central Hospital, Benxi, China; Chang’An Hospital, Xi’An, China; 3rd Affiliated Hospital of Qiqihar Medical University, Qiqihar, China; Tianjin Medical University Cancer Institute and Hospital, Tianjin, China; People’s Liberation Army Hospital 307, Beijing, China; Champions of Medical Advancement Associates, Beijing, China. In FY14, we also established international relationships with the Taizhou China Medical City, Changzhou Fourth People’s Hospital, Changzhou First People’s Hospital and WuXi YiRen Hospital.
- The ORDA continues to regularly hosting representatives of biotechnology and pharmaceutical companies at ICR/FCCC with the objective to learn about corporate development pipelines and preclinical research endeavors, and in turn, for companies to hear about ICR/FCCC preclinical research and Phase I-IV clinical research programs.
- Companies hosted at ICR/FCCC during the year included but are not limited to: Novartis, ShanghaiBio, Life Technologies, Fujifilm, Morphotek, Olympus, Champions Medical, Caris, ShanghaiBio, Deloitte, BoStrategy Partners, GlaxosmithKline, CMAA, PerkinElmer, BioServe, Sanguine, ShanghaiBio, and Fujirebio.
- The ICR/FCCC Marketing and Public Affairs Department prepares press releases and notifies the media about significant research milestones achieved at ICR/FCCC, including the publication of papers and the filing and issuance of patents. These offices also propose stories to regional and national media outlets about research being conducted at ICR/FCCC. In FY14 there were three press releases that included partnerships specifically brokered by the ORDA.
- Researchers publish papers and present their work at conferences and are frequently contacted by their colleagues from industry. Researchers are encouraged to cultivate these relationships and inform the ORDA of potential collaborations that evolve therefrom.
- Technologies available for licensing are described in listings on the ORDA section of the Fox Chase homepage. Technologies are also listed with commercial websites that provide descriptions to subscribing life science companies and venture capital firms.
- The ORDA writes descriptions of technologies available for licensing which are strategically distributed to industry business development executives, venture capitalists and other potentially interested parties.
- ICR/FCCC prints publications that describe ongoing research projects being conducted by ICR/FCCC faculty and staff. These publications are widely distributed by ICR/FCCC staff to industry, venture capitalists, candidates for employment, etc.
- Members of the ICR/FCCC Board of Directors are kept informed through presentations at board meetings and in discussions with ICR/FCCC administration.
- When the ORDA receives an invention disclosure, the ORDA staff identifies those

companies most likely to be interested in the technology. The appropriate individual at each company is then contacted by letter, email or phone to make them aware of the nature of the technology, its stage of development and its competitive advantages.

- The ORDA and ICR/FCCC researchers maintain a network of contacts that they regularly update about new developments in ICR/FCCC's laboratories.
- The ORDA staff regularly attends technology rich conferences including BIO, AUTM meetings, LES meetings, BioPharma America meetings, etc.
- All ORDA staff members are encouraged to play an active role in their respective professional organizations. The visibility created by this activity facilitates new relationships between the ICR/FCCC and industry.

Research Development Collaboration

Fox Chase has a history of establishing new firms around a platform technology, as it has demonstrated success in the creation of spin-off companies. One of its first spin-off companies founded in 2005 with patented technologies discovered at the Center, NexusPharma is developing novel therapies based on small molecule protein-protein interaction inhibitors. The Center patents provide the basis for NexusPharma's platform technology, and enable the discovery and development of novel therapies by modulating protein-protein interactions with small molecules to advance the treatment of cancer through approaches based on non-cytotoxic mechanisms.

Another Fox Chase spin-off, Dynamis Therapeutics, focuses on the discovery and development of therapeutic pharmaceuticals for treatment of diabetic complications. Fox Chase Cancer Center granted Dynamis an exclusive world-wide license, including the right to grant sublicenses, to make, have made, use and sell products and processes related to metabolic pathways of fructoseamine-3-kinase and 3-deoxyglucosone (3DG), adversely reactive molecules that cause the formation of free radicals and advanced glycation end products. Today the company is focused on developing new pharmaceuticals to treat the effects of aging, to prevent or minimize the devastating effects of diabetes mellitus, and Dynamis has developed and introduced an anti-aging cream to the professional spa market with a distributor and sales team. These companies have been successful recipients of Ben Franklin funding, BioAdvance funding and federal SBIR funding.

In FY14, ICR/FCCC continued the development of and licensing discussions with three additional spin-off companies, two of which executed option agreements in FY14 with ICR/FCCC: (1) OncoSpec, LLC - Early Detection of Pancreatic Cancer (option agreement executed); (2) RAAbD – Rational Antibody Design (option agreement executed); and (3) Aroxel – Facial Mask Medication

OncoSpec

Specifically, OncoSpec will develop and commercialize assays for the early detection of pancreatic cancer enabling physicians to make better treatment decisions. OncoSpec has a

defined regulatory path and clear-cut reimbursement strategy. OncoSpec will target the estimated \$100 million market for pancreatic cancer alone. The assay uses mass spectrometry-based nanoscale separation technology. OncoSpec will offer a CLIA-certified EDPC assay as a fee-for-service to physicians. The technology is designed to provide reliable measurements of multiple biomarkers in minute volumes of pancreatic cyst fluid. In FY14, the company executed an option agreement to two patented technologies from ICR/FCCC.

RAbD – Rational Antibody Design

The inventors are highly experienced in the development of therapeutic antibodies, signal transduction pathways and molecular modeling. RAbD uses novel proprietary and public protein structure prediction software to model the interactions between proteins that play a critical role in cancer and other diseases. RAbD's proof of concept work is focused on two target antigen systems - the Müllerian Inhibiting Substance Type II Receptor (MISIIR) and the ErbB family of receptor tyrosine kinases, both of which are highly relevant to the treatment of a variety of oncologic indications. Both projects have yielded lead molecules that demonstrate RAbD's ability to generate novel antibodies. In FY14, the company executed an option agreement to three patented technologies from ICR/FCCC.

Aroxel

Part of Aroxel's business model is to modify everyday facial masks to incorporate within medicated compounds (menthol, albuterol, calcium channel blockers, corticosteroid, antihistamines, pre-anesthesia sedative, antiviral, etc), stimulant compounds (low dose ammonium carbonate, caffeine, etc.), or herbal compounds (vitamin C, anti-oxidant formulations, eucalyptus, peppermint, rosewood, coriander, herbal aromatics, ginko). The mask incorporates scented pressure-activated discs containing pro-compounds in microcapsules or alternative delivery systems that release a vapor therapy, gentle stimulus, herbal treatment or pleasant fragrance for the wearer when activated by squeezing the disc. In FY14, the company changed its name from MaskMate to Aroxel.

The ORDA participates actively in regional trade organizations such as the Greater Philadelphia Venture Group, Women's Investment Network, and the Pennsylvania Biotechnology Association in an effort to identify Pennsylvania companies whose interests coincide with those of ICR/FCCC. The research interests of these companies are maintained in a database so that an appropriate group of companies can be contacted when a collaboration opportunity arises.

In FY14, ICR/FCCC executed 15 laboratory sponsored research agreements (including amendments), 138 material transfer agreements, 73 confidentiality agreements and 68 clinical trial agreements with industry.