

Experience Biotechnology



The Sanofi-Aventis BioTalent Challenge
Developing talent for the future



Défi BioTalent
sanofi-aventis
BioTalent Challenge

The Sanofi-Aventis BioTalent Challenge is a national, biotechnology-focused science competition that exposes high-school students to career possibilities and reveals the breadth of endeavour that makes up the bio-economy.

The Sanofi-Aventis BioTalent Challenge partners

sanofi-aventis

sanofi pasteur

BioTalent Canada

National Research Council Canada

Genome Canada

Canadian Institutes of Health Research

Canada Foundation for Innovation

Canadian Louis Pasteur Foundation

The SABC would not be the success it is without the contributions of more than 100 partners across the country, including the founding partner Sanofi Pasteur Limited; the national partners; the national coordination by the Canadian Biotechnology Education Resource Centre (CBERC); 14 regional coordinators; numerous local sponsors across the country; and the passion of the teachers and mentors who volunteer their time to give the students hands-on experience in the world of biotechnology.

A partnership in this program is something to be proud of and celebrate!

www.sanofibiotalentchallenge.ca

Published by:



Why experience matters



For Canada to make the most of the abundant opportunities emerging from the bio-economy, it requires one thing above all others: a deep, broad pool of capable talent. Education, training and skills development all play their parts in cultivating that talent, but equally important is experience. Employers routinely assert their need for candidates who have a practical sense of what it's like to work in a real-world biotechnology environment. The Sanofi-Aventis BioTalent Challenge gives high-school students the opportunity to gain that experience—and gives mentors and employers the opportunity to shape the talent required for tomorrow's success.

The bio-economy today



Biotechnology is a diverse, multidisciplinary endeavour underpinning a truly new economy emerging in countries around the world. With deep roots in agriculture and resource-related industries—and with great capacity for innovation and research—Canada enjoys an early leadership position in the bio-economy.

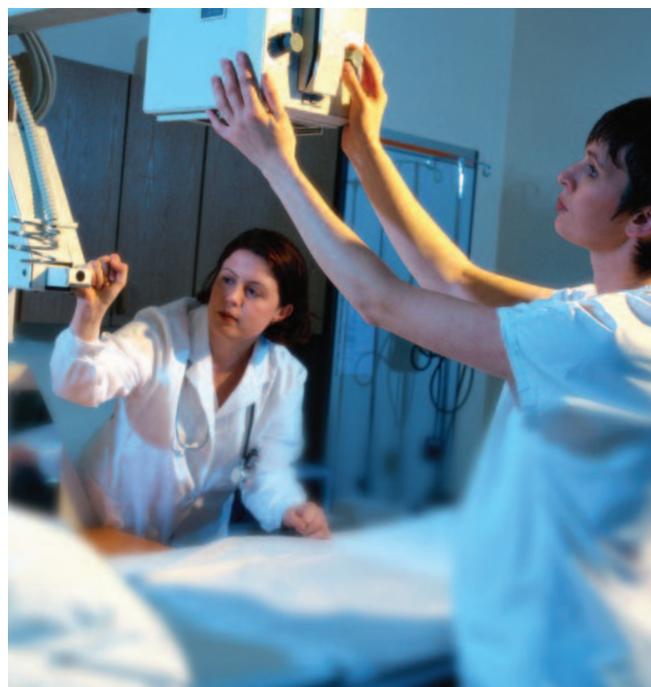
From agriculture to medicine, food processing to natural-resource management, biotechnology is a broad and fertile field with tremendous benefits for people, their communities and the world as a whole. Its implications are scientific, technological and economic: crops enhanced to withstand changing climatic conditions can improve the stability of agricultural industries; new medicines can improve health outcomes and reduce the many costs of illness and disease.

Taking up the talent challenge

Every year, thousands of talented graduates emerge from post-secondary programs related directly to the bio-economy—in disciplines such as chemistry, biology, agriculture and human health. Yet few have the practical skills and professional maturity to step straight into jobs with Canadian biotechnology companies. Practical experience is essential.

Sanofi-aventis and its many partners recognized this crucial fact and in 1994 established what today has become the Sanofi-Aventis BioTalent Challenge (SABC). Its aim: to raise awareness among high-school students, educators and the public of the science of biotechnology and give hands-on exposure to its many applications.

By doing so, the SABC not only encourages young people to pursue studies and careers in the field but also gives them the experience they need—and that Canada's biotechnology companies need of them.



Getting hands-on experience in the biotechnology industry equips young people with the skills and practical knowledge they need to ensure their future success in the field.

The bio-economy involves the research, development, manufacturing and commercialization of technologies and products for such areas as:

Agriculture	Biosciences	Life sciences
Aquaculture	Environment	Medical devices
Bioenergy	Food processing	Natural resources
Bioinformatics	Human health	Pharmaceuticals

Between 2003 and 2005, the size of Canada's biotechnology-related workforce grew by 13 percent—testament to the rapid expansion and numerous opportunities associated with the bio-economy.



Biotechnology applies science and technology to living organisms. Its materials are the building blocks of life: fundamental components such as DNA and RNA, proteins, peptides and enzymes, cells and tissue cultures, gene and RNA vectors.

A life-changing experience



Since 1995, more than 3,000 high-school students have taken part in the Sanofi-Aventis BioTalent Challenge. Not only has it exposed them to a world of cutting-edge research and career opportunities—it has also given many the unique chance to pursue deeply personal goals and acquire a profound sense of purpose.

In 2007, Ted Paranjothy swept the entire competition with first-place finishes at the regional, national and international levels. His project? The search for an alternative to chemotherapy. After the death of a childhood friend, he resolved to find a treatment for cancer that would attack harmful cells and spare healthy ones. His work involved ‘deconstructing’ apoptin, a protein that destroys cancer cells. The experience gave him invaluable exposure to real-world lab work and ignited a passion he continues to pursue—namely, medical research.

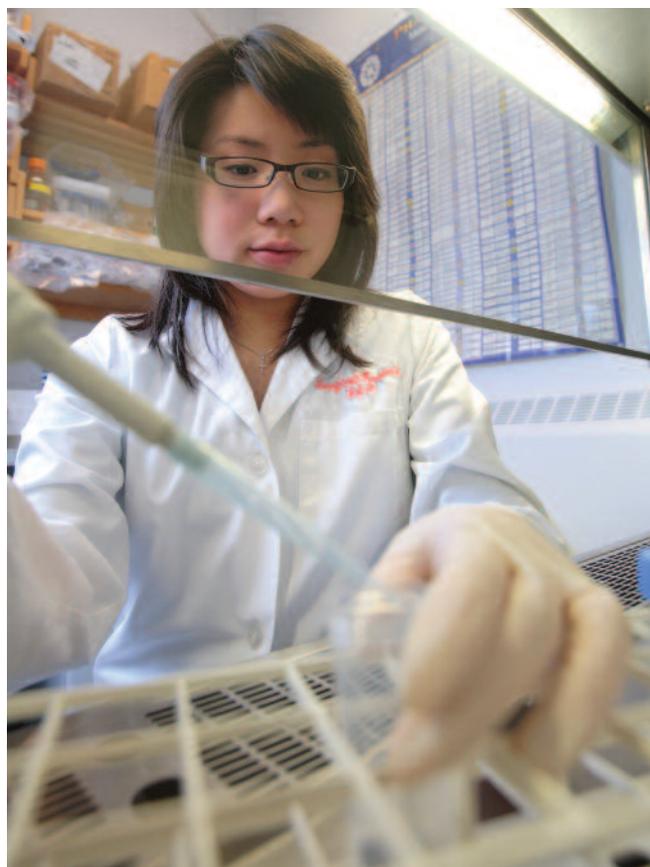
Sixty six percent of students taking part in the 2007 SABC said the competition helped them choose their planned field of continuing study. Those fields range from biology, chemistry and environmental science to forensic science, health science and marine biology. Ninety-nine percent of competitors surveyed said they intend to go on to post-secondary education.

Envisioning future careers

As part of the competition students benefit from the experience of working in a real lab; going through the scientific process of hypothesis, proposal, experiment and analysis; and receiving guidance from an expert. The majority (roughly 83 percent) of SABC participants in 2007 said the competition helped them gain a positive understanding of Canada’s biotechnology sector. Fifty-six percent said the competition helped them form their long-

term career plans by focusing them on specific areas of interest and grasping the full breadth of issues associated with biotechnology. In the words of one participant:

“I knew that I wished to pursue a career in the sciences. Preparing for this competition gave me a feel for what it would be like to work in a lab-type environment. It was a great experience and helped me confirm that the scientific field is what I wish to be part of.”



John Ulan/Epic Photography

Tracy Mah was intrigued by biology from the moment she realized her allergies were caused by the workings of her own immune system. A second-place finalist in the 2005 SABC national competition, she now studies immunology and infections at the University of Alberta.

Close to one million dollars in scholarships, bursaries and awards for academic achievement have been presented to SABC participants, helping them further their progress toward educational and career goals.



John Woods

"My cancer research project was inspired by a combination of an intrinsic curiosity of nature and how it functions, as well as a personal motivation to rid the world of cancer after seeing the debilitating effects it has had on a number of individuals I have known."

Ted Paranjothy

SOURCE: The Globe and Mail, Thursday, June 7, 2007 "Young Achievers Follow their Passions"

Experiencing the rewards



Every year, the mentors who lend their time and experience to the SABC remark on how gratifying it is to see young people apply their curiosity and gain confidence in the lab—becoming not only more proficient scientists but also well-rounded professionals in the making.

Scientific research is a demanding endeavor. It requires a combination of passion and skill, tenacity and creativity. Mentors participating in the SABC work to bring out all of these qualities in the young people they support. Their role is to help students understand and make their way through the research process—from proposal and experiment design to data collection, analysis and ultimately conclusions that hold up to scrutiny. They advise and encourage, and they cultivate essential related skills associated with communication and networking, project management and goal-setting—guiding participants to an appreciation of the researcher’s role within the scientific community. Mentors also help their students prepare for the final competition where they will present their work and findings to a multidisciplinary panel of judges.

How the mentorship works

Some students come to the Challenge with a mentor in mind, but in most cases mentors are assigned to students by the SABC Evaluation Committee according to their expertise and facilities. The chosen mentor assesses the student’s initial proposal, offers constructive criticism, and helps him or her refine the approach so that productive research can proceed. While they offer guidance and instruction, mentors leave the actual lab work to the students themselves—following safety guidelines and professional best practices, and providing support for procedures beyond the young people’s qualifications.

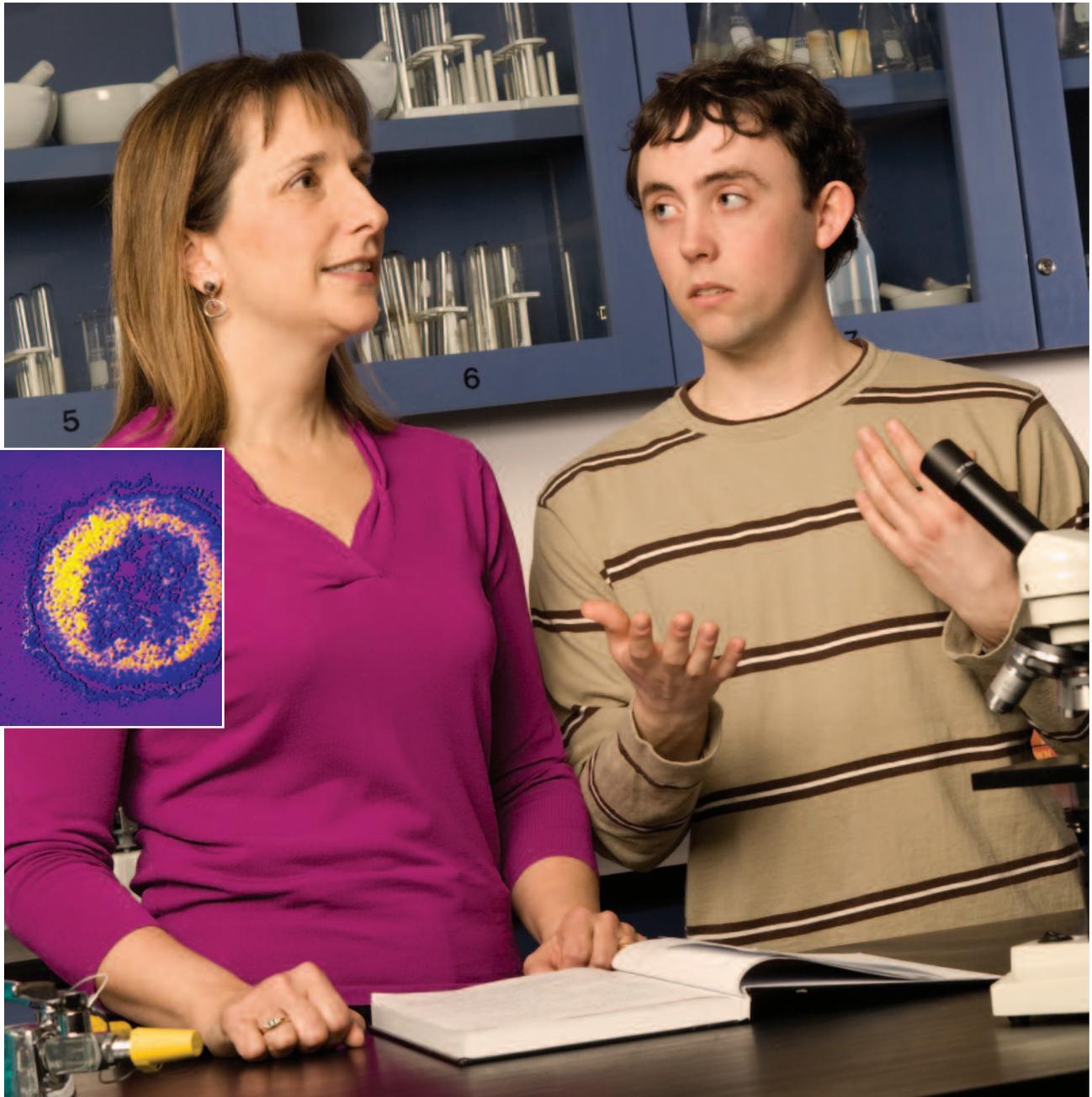


Dr. Jonathan Angel and Dr. Angela Crawley have lent their experience as SABC mentors for several years. The machine they appear with here counts, examines and sorts blood cells. In their work, they use it to build knowledge of the immunological parameters of HIV and ultimately discover novel treatments and vaccines.

The Challenge’s approach to mentorship was developed in keeping with the National Academy Press’ *Advisor, Teacher, Role Model, Friend*—a 1997 document outlining best practices for this all-important undertaking. The experience of mentorship is richly rewarding. Said one participant, “I was glad of the opportunity to work with such bright young people and I think I learned as much from them as they did in my lab.”

"James came to us, a new student in the school, and said he wanted to conduct scientific research into HIV. We leapt at the chance to create that opportunity for him. All students should have the privilege of pursuing their passions.

Liana Krauthaker, High School Teacher, All Saints High School, Ottawa



"Our teacher was explaining how the virus attacks specific cells in the body's immune system," James MacLeod recalls. "I remember thinking about that process and wondering why it happens. My teacher loaned me some university textbooks and my interest just developed from there."

Experience required



The bio-economy is burgeoning in Canada, driven to a huge extent by the emergence of small and medium-sized enterprises—nimble entrepreneurial organizations whose big ideas have strong market potential. To realize their potential, these companies need a versatile pool of skilled talent to draw from, a pool the SABC was designed to help create.

The national and regional supporters of the SABC bring diverse perspectives and resources to the table—all out of a strong commitment to seeing Canada maintain a leadership role in the bio-economy.

"Biotechnology will lead to the development of new medical treatments and vaccines, environmentally-friendly sources of fuel, and other agricultural and bio-processing applications that will improve people's lives and strengthen our economy," says Mark Lievonon, President of Sanofi Pasteur Limited - the company that created and spearheads the Challenge each year. "The competition plays a direct role in giving young people hands-on experience and exposure to these possibilities with the support of national and local sponsors, regional coordinators, and the passion of the teachers and mentors who volunteer their time."

Flexibility. Versatility. Maturity.

Because so many of Canada's biotechnology firms are small and medium-sized enterprises (SMEs)—approximately 75 percent of them—they don't often have the financial or management resources to invest extensively in training and professional development. And the majority need the people they hire to be versatile, able to 'wear many hats', tackle a variety of roles.

The SABC operates with these realities in mind, following a process and calling on the real-world expertise of mentors to help students become better-rounded candidates—and to give them an understanding of the ins and outs of working in a research lab. It also helps the students integrate into biotechnology networks at the local, regional and national levels—to get "a glimpse into the scientific community that one rarely sees," in the words of one student—forging connections that will serve them in their careers down the road.



Photo courtesy of the National Research Council Canada

National Research Council scientists are using a cutting-edge nanolithography hot embosser to create new biohazard detection and medical diagnosis technologies. This nanolithography research also has applications in the micro-electronics and optics industries.

Cooperation between industry and academia is essential to the success of Canada's bio-economy. Companies like sanofi-aventis and the other supporters of the SABC are committed to forging connections and creating opportunities that will bolster Canadian biotechnology efforts for the long-term.



Photosanofi-aventis

Biotechnology is a hands-on science—putting researchers in direct contact with living matter and giving them glimpses into the inner workings of life.

Enriching the experience



Cancer treatment. Insights into HIV-AIDS.
Allergen detection. Organic waste disposal.
SABC competitors explore wide-ranging areas of scientific inquiry. Their research has real impact. And no matter who wins the Challenge, every entrant—and Canada's biotechnology community—benefits from the experience.

The SABC has demonstrated that if students carry out research projects of their own design they better understand the practice of science: the skill and patience it requires, the unpredictability of research, the great rewards of perseverance.

The objective of the SABC national supporters is to continually enrich the experience afforded by the competition to competitors, mentors—and to the supporting organizations themselves, which have a stake in the future strength of Canada's biotechnology talent.

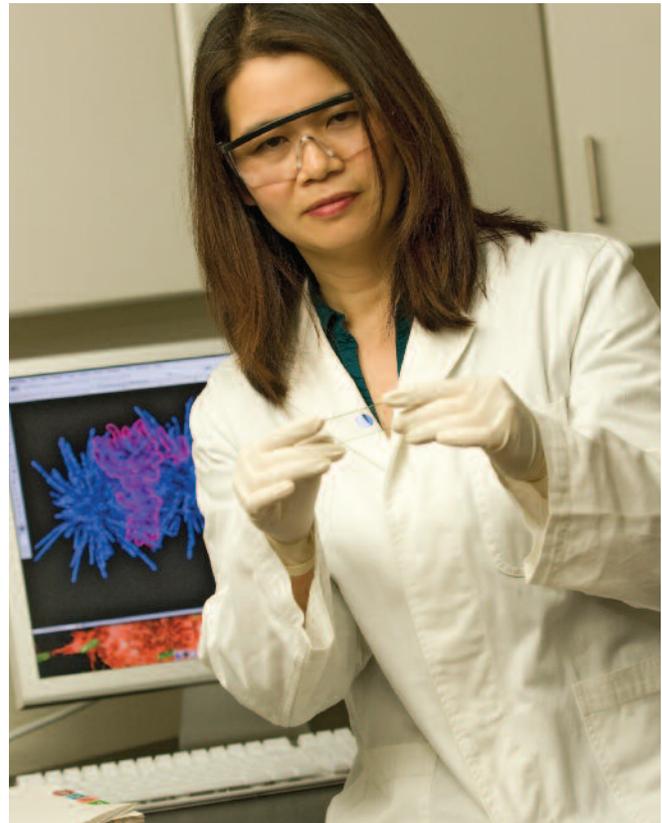
A nudge in the right direction

The SABC is exceptional as a continually expanding national competition that increasingly provides opportunities for students in remote and rural communities to participate. In 2007, northern Manitoba and northern Saskatchewan joined—forming the competition's 14th region.

Encouragement is key. Seventy-one percent of participants in 2007 said the competition was brought to their attention by a teacher, principal or school counselor. Sixty-four percent were motivated by their desire to work with a mentor who could help focus and foster their natural interest in science.

That's why the SABC national supporters urge educators across the country to encourage their students'

participation in the program—to foster their spirit of scientific inquiry. We invite scientists working in biotechnology to step forward and offer the benefit of their wisdom as mentors. And we encourage organizations



Nothing compares to the value of real-world laboratory experience for young people interested in scientific careers. The SABC builds on that value by allowing students to pursue their own research interests and experience the feeling of making a positive contribution so science and society.

throughout Canada—at the local level or nationally—to support the SABC and take an active role in shaping the future of the biotechnology sector.

A prosperous future in biotechnology is within our reach. All we have to do, together, is shape the talent to take hold of it.