

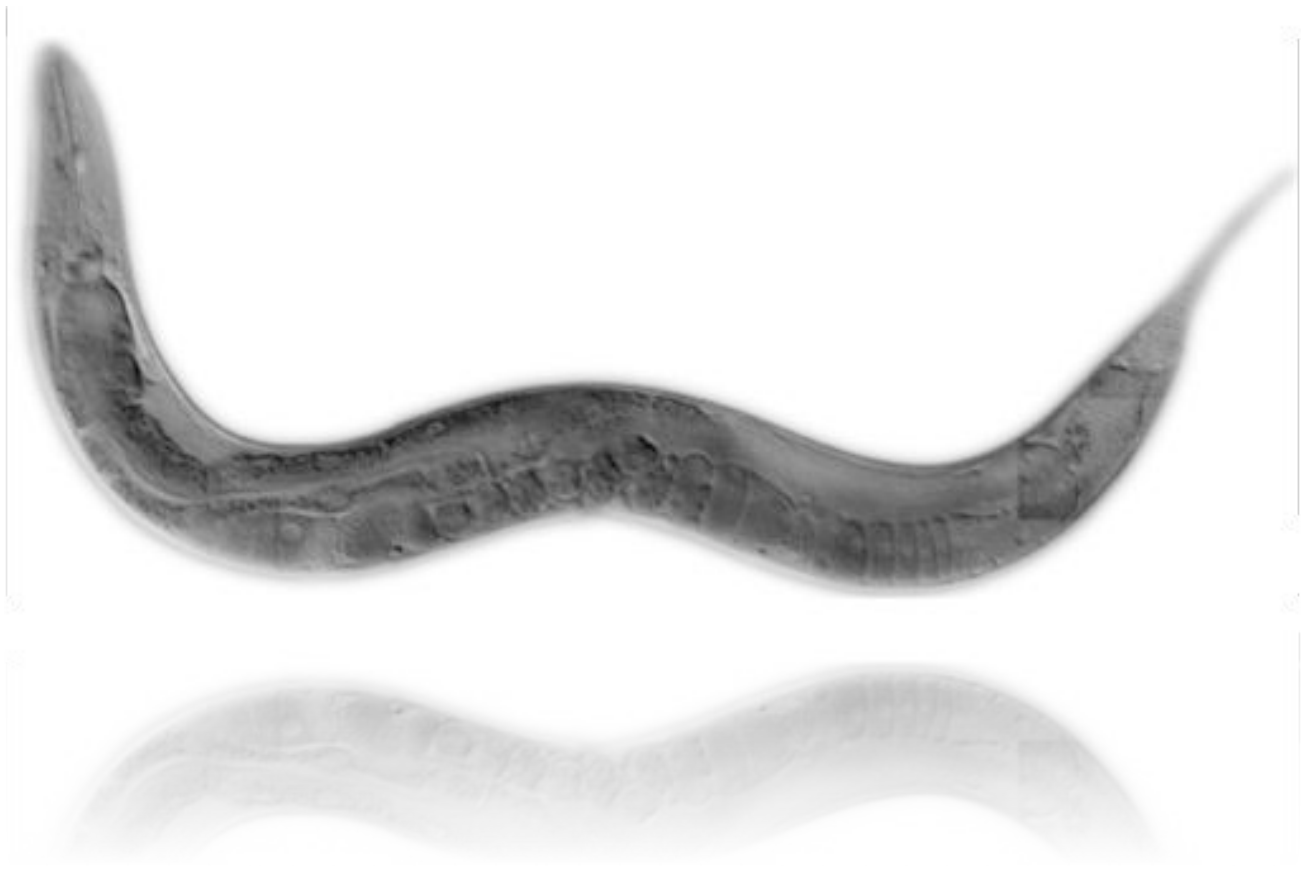


Sponsorship Package

Queen's Genetically Engineered Machine Team

2011

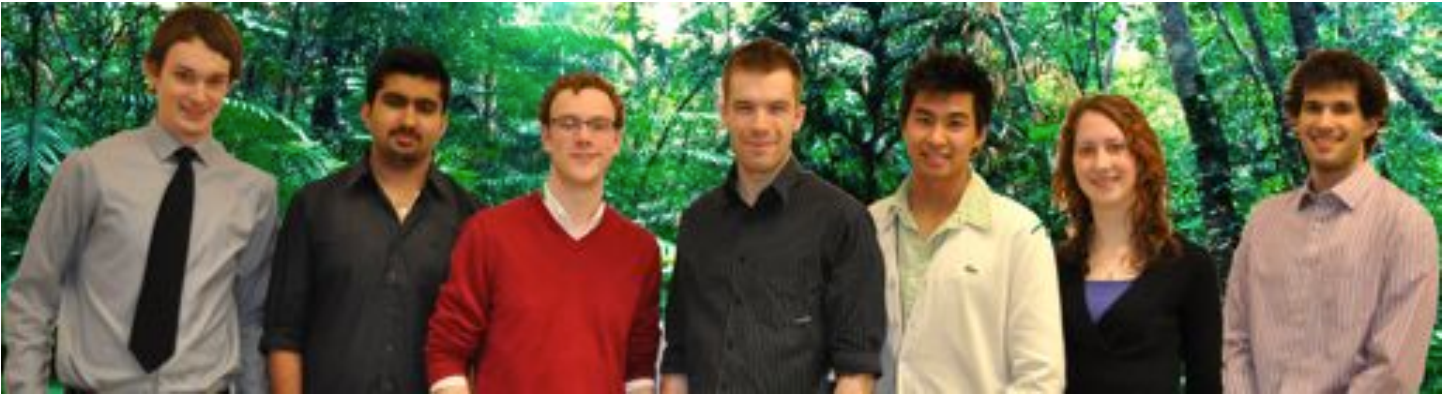




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About Us

QGEM is a group of undergraduate students at Queen's University who design and implement genetic engineering projects. We do this within the framework of the iGEM competition, which challenges universities around the globe to develop practical solutions to everyday problems using the vast wealth of knowledge that molecular biology and biochemistry research has generated in recent decades.

The International Genetically Engineered Machine competition was started in 2004 at MIT as a way to get students actively involved in the fledgling field of synthetic biology. More than a hundred teams from around the globe enter each year, making it one of the world's largest undergraduate conferences. The objective is to create a biological 'machine' through genetic engineering that can perform a real-world task. Projects are judged based on the new genetic parts they contribute, characterization of these parts, collaboration with other teams, and development of new standards, presentations, and capabilities.

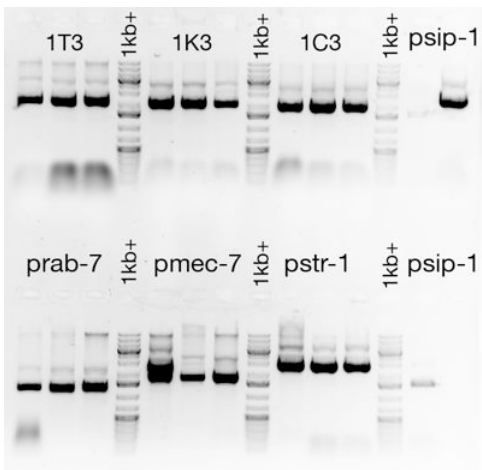
In order to do well in the competition, a team must be highly diverse in educational background. Our team includes students and faculty advisors from the departments of Chemical Engineering, Biology, Biochemistry, Life Sciences, Computer Science, Pathology, and Microbiology and Immunology. This allows a wide range of skills to complement one another, and affords students the opportunity to perform state-of-the-art research at the undergraduate level. While adhering to standard safety protocols and creating parts that conform to iGEM standards, projects are truly open-ended, allowing students immense creativity and freedom in their work.

Although it is structured as a competition, the intent of iGEM is to create an atmosphere of cooperation and accessibility. Each project ultimately contributes to the Parts Registry, a curated, open source collection of standardized and characterized genetic components which future teams may use as a basis for their work. This allows scientists to advance synthetic biology safely, while ensuring its accessibility.

More information about last year's competition can be obtained at 2010.igem.org.

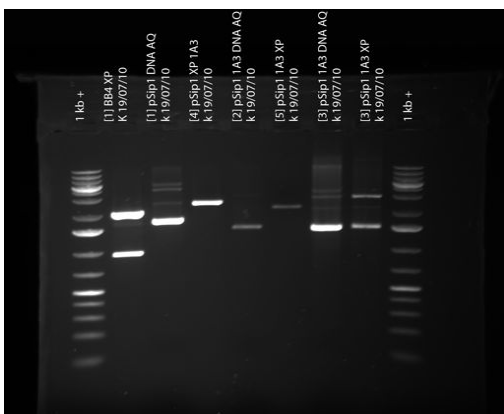


Projects

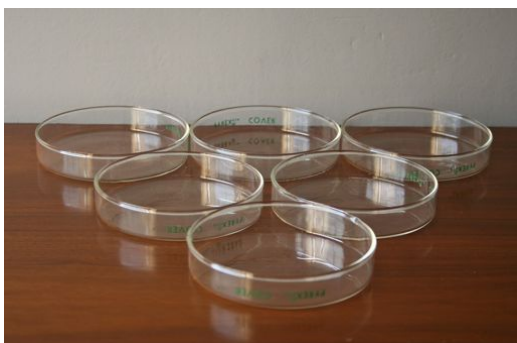


QGEM 2010: 'WormWorks'

For 2010, we chose a project that would maximize our ability to contribute to the field of synthetic biology and fully utilize our academic resources. Without exception, all of the work at iGEM in previous years has been restricted to single-celled organisms, mostly bacteria. Our project introduces *Caenorhabditis elegans*, a nematode worm commonly used in developmental biology, as a new chassis for future teams to build their projects around. This breakthrough embodies one of the major goals of iGEM, which is to improve the available body of well-understood tools and resources for synthetic biologists to utilize.



To accomplish this goal, we have isolated a number of promoter sequences for various tissues and conditions of significance, which will allow us to produce, selectively, a given protein under heat-shock, throughout the organism, or in one of several neurons of interest. We have also isolated fluorescent proteins and ion channels that will allow us to illuminate and selectively trigger these neurons, thereby allowing us to control the worm's actions on a level much more fine than with bacteria or yeast.



The 2010 QGEM team received a **Gold Medal** at last year's iGEM competition. This is a major accomplishment for the Queen's iGEM team. Receiving such an award proves that the QGEM team can not only meet the high design standards of the iGEM competition, but also successfully compete with other internationally renowned universities. The team had to meet dozens of stringent criteria in order to receive the Gold medal. Specifically, the medal was given because the QGEM team "developed and documented a new technical standard that supported the design of BioBrick Parts or Devices." This standard will be of great use to future iGEM teams.

For more information on last year's project, please visit <http://2010.igem.org/Team:Queens-Canada/full>.



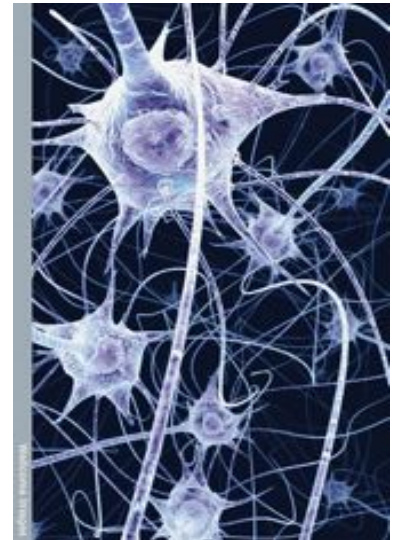
QGEM 2011: This Year's Project

This year's project is set to build upon QGEM 2010's foundational efforts with *C. elegans*. The team is aiming to design and build systems in the nematode that will be useful for real world applications.

C. elegans has in-born chemo-attraction systems that can be modified and then utilized to allow the worm locate and then move over long ranges towards the specific substances in the environment. *C. elegans* ability to move hundreds of metres per day, and its relatively long life-span could make it great for locating and interacting with substances in the environment. For example, the worm could be used to detect heavy metal contamination in soil or water.

Once the nematode has located its target substances, it may be used as a tool for environmental remediation. The digestive system cells of the worm may be engineered to carry out a series of reactions to breakdown substances like oil processing and extraction by-products. Conversely, the worm could be engineered to perform a series of sequential biosynthesis reactions that may be useful industrially. Different reactions in the sequence can be localized to specific locations in the worm by expressing the genetic modifications only in specifically chosen cells. The 2010 QGEM team was successful in implementing a system of specific cell expression.

Specifically, the fusion of native *C. elegans* G- protein coupled receptors (GPCRs) and G-proteins contained in olfactory neurons to GPCRs from different organisms containing binding sites for toxic molecules will allow the worm to chemotax towards toxic molecules in their environment. The long-term goal of this research is to couple the molecular detection system to an engineered biological mechanism for the reporting and/or catalytic breakdown of toxic molecules in the environment.



Sponsorship Benefits

Sponsoring an iGEM team will have your organization featured at the iGEM Jamboree, one of the largest undergraduate conferences in the world, involving over 100 institutions from 24 countries.

All sponsors of QGEM in 2011 will receive a complementary Promotions Package, which includes an electronic copy of poster and presentation files, video of iGEM presentation, and an electronic copy of wiki (including notebook files, overview of 2011 project and research).

The QGEM Team's participation in the iGEM competition is an unparalleled partnership and recruitment opportunity. QGEM is comprised of highly motivated undergraduate team overseen by exceptional Professors at one of Canada's top universities. As a sponsor of an iGEM team, your business will be featured in the annual jamboree held at MIT in Boston where over 130 teams and 2000 participants from around the world meet to compete. Furthermore, feedback from delegates attending last year's jamboree indicated sponsoring iGEM greatly enhanced a company's image.

Tier	Bronze	Silver	Gold	Platinum
Amount	<\$500	\$500-\$999	\$1,000-\$4,999	>\$5,000
Promotions Package				
Company logo on team wiki				
Company name on team apparel				
Company logo on team apparel				
Company featured on team website and wiki				
Company logo on poster and presentation				
Verbal recognition during presentation				





QGEM Budget

The following budget is a projection of total annual project costs, based on 2010 costs. Queen's University and Canadian federal programs assist in funding student stipends. The Queen's SWEP student stipends have been obtained; which, accounts for 45% of the team's funding. Specific requirements vary each year. Starting in 2011, donations to the team will be eligible for Canadian tax receipts as issued through Queen's University.

Component	Amount
SWEP/NSERC Student stipends	32,928.00
Other student stipends	14,112.00
iGEM team fees	1,750.00
Student Jamboree fees	2,700.00
Advisor Jamboree fees	1,275.00
Travel	3,000.00
Accommodations	3,600.00
Lab reagents	6,350.00
Team apparel	600.00
2% contingency	1,314.30
Total	\$67,629.30

QGEM Partnership

QGEM is currently at 70% of its funding requirements for the 2011 season and expects to receive full funding shortly. Take part in this groundbreaking student initiative before it is too late.

Our current financials provide an unparalleled partnership for your organization as our Platinum Sponsor position is available. Set your organization apart as an innovative leader as QGEM's principal sponsor and offer students the opportunity to engage in world-class research.



Past and Current Sponsors

Queen's University

- Faculty of Arts and Science
- Faculty of Life Sciences
- Applied Science Class of '74 Tradition of Leadership Fund
- School of Medicine
- Department of Pathology and Molecular Medicine
- Department of Biochemistry
- Department of Chemical Engineering
- Dean of Student Affairs Student Initiatives Fund
- Faculty of Engineering & Applied Science Dean's Excellence Fund
- Summer Work Experience Program
- Arts and Science Undergraduate Society



Canadian Federal Program

- NSERC Undergraduate Student Research Awards Program



Corporate



Contact

If you have any questions, or would like to discuss how you can become part of this exciting research team, please don't hesitate to contact QGEM or visit the 2010 Wiki at <http://2010.igem.org/Team:Queens-Canada/full>.

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