



***Fourth Innovation Council Meeting  
Department of Chemistry***

**Minutes**

**Date:** Thursday, May 2, 2002, Toronto Board of Trade

**Time:** 8:00 am to 3:00 pm

.....  
8:00 - 8:20 *Breakfast*  
.....

Randy Gossen of Nexen Inc. sponsored the meeting.

**Council Members in Attendance:**

Barry Robins, QCIC Chairman (Davos Chemicals)  
Dale Cameron (Micrologix)  
Nick Darby (Dow)  
Jamie Hallman (Fisher Scientific)  
Kingsley Ward (Vimy Ridge Group)

**Queen's Members in Attendance:**

David Wardlaw (Head, Department of Chemistry)  
Stan Brown (Professor and QCIC Liaison, Chemistry)  
Rick Boswell (Manager, Department of Chemistry)  
Doug Puffer (Faculty Senior Development Officer)  
Myrna Horton (Faculty Projects Assistant/Recorder)

**New Council Members in Attendance:**

Wayne Schnarr (Oncolytics Biotech)  
Montse Llinas-Brunet (Boehringer Ingelheim)

**Queen's Chemistry Department Guests:**

Donal Macartney (Professor, Chemistry)

**Other Guests:**

Jan Oudenes (Torcan)  
John Molloy (Queen's President & CEO, PARTEQ)  
George Hood (Queen's Vice-Principal, Advancement)

**Absent Council Members:**

Bruce Chernoff (Petrobank)  
Ron Commander (Bayer)  
Randy Gossen (Nexen)  
Neal Matheson (Johnson & Johnson)  
Ken Reucassel (International Group)  
Dave Thomas (AXYS)

Shirley Tilghman (Princeton U.) (**New member**)  
Rastko Vukov (Rhodia)  
Dinesh Vyas (Bristol Myers Squibb)  
Darwin Wilson (Dow)  
Robert Young (Merck Frosst)  
Ron Zelonka (DuPont)

**Resigned:**

Sue Riddell Rose (Paramount)

# General Session

## Welcome & Introduction

Barry Robins welcomed everyone and introduced the following new members and guests:

### New Members:

Wayne Schnarr, *PhD'77 (Chemistry), Vice President, Corporate Development, Oncolytics Biotech Inc.*  
Montse Llinàs-Brunet, *BSc'79 MSC'80 (U. Barcelona) Ph.D'86 (U of A) Group Leader, Medicinal Chemistry, Boehringer Ingelheim*

Shirley Tilghman, *BSc'68 (Chemistry) President, Princeton University* **Absent**

### Guests:

Jan Oudenes, *(U of A), President of Torcan Chemical Ltd.*

John Molloy, *CEO of PARTEQ*

George Hood, *Vice Principal of Advancement, Queen's*

## Overview

David Wardlaw convened the meeting. He gave an overview of the day, which was spent primarily discussing the following 3 focus topics that resulted from an early planning meeting in March. He also expressed a thank you to Randy Gossen of Nexen for sponsoring the meeting today.

**Focus #1: Industrial relations & opportunities;**

**Focus #2: Donations of equipment for undergraduate laboratories**

**Focus #3: Where is chemistry going & what is the Council's role**

### Focus #1: Industrial relations & opportunities

- **Needs of the department – David Wardlaw**

David showed an overhead slide that listed the needs along with corresponding challenges, as follows:  
Contracts – allow for overhead revenues, but contractor perspective unclear; education needed as to what contractors are looking for in awarding contracts, as a product of contract and, in terms of IP rights; Start-ups appear to be of limited direct academic benefit but can provide indirect benefits such as overheads, profile of department, connections to industry, more research personnel.

Exchange visits – limited seminars and consulting between academia and industry and vice-versa

Training and employment – student internships, summer employment and industrial PDF opportunities  
Educational opportunities for industrial sectors – sponsored graduate studies and short courses for professionals in chemical industry

Industrial Research Chairs – could provide 1-2 additional faculty; need to understand industry perspective and expectations to find “match” and invest dollars

- **PARTEQ – John Molloy – How Queen's can help**

John provided a power point presentation. As a technology transfer organization since 1987, Parteq manages the IP and Venture arms of Queen's, with one of the most successful track records among universities in North America. John provided a number of examples.

How Parteq rates - Although one of the smallest sponsored research funding budgets amongst U of T, UBC, U of A and McGill, Queen's rates the highest in commercialization productivity revenue.

Parteq Approach - Approach is based on value-added development of IP, the process is managed and infrastructure built as value increases, creating new venture to facilitate investment.

Parteq Model Works – over \$230M raised by spin-offs to invest in Licensed Technology; over \$450 million invested in development; 25 spin-offs which employ over 150 people, over 75 in Kingston.

Investment – WV CMDF Queen’s Scientific Breakthrough Fund 1999 - \$7M CSBIF: 11 investments \$6.1 million; PARTEQ Internet Ventures Fund Inc. - \$2.5 million CSBIF: 2 investments \$900K

In response to Nick’s questions, the “equity” of these spin-off companies is owned by Parteq. The value-added approach at Queen’s allows for investing based on the licensing deal. Parteq manages the only captive venture fund at Canadian universities. The small companies are structured with co-sponsorship from government; as they grow, larger limited partnerships are sought.

- **George Hood - new opportunities in Kingston area: proposed R & D Park**

George presented the cultural challenges and innovative opportunities facing the Kingston local community. He advised of his involvement with KEDCO (Kingston Economic Development Corporation) and the proposed “Collins Bay Penitentiary Research Park”. The proposal to acquire 659 acres of farmland, across from Dupont, will go before the Federal Government/Correctional Services and it is hoped that we will know by this summer. Acknowledging that change in Kingston is difficult due to a primarily public funded community, George was optimistic about investment from the private sector. He gave an example of Queen’s offer to purchase the City of Kingston Courthouse and the apprehension around potential private monies and naming blunders, so the sale did not happen. He also cited the government cuts as a positive move in changing the community mindset and was optimistic about entrepreneurial investment in Kingston, born out of necessity. He believed the QCIC members could help. In regards to the \$200M Campaign for Queen’s, George relayed a successful fundraising undertaking - not only was the expected \$150M raised, but \$220M is in the door – a rare feat in a community of Kingston’s size. He noted that Kingston’s location - 2 hours from everywhere – is one of its key benefits. With the success of Parteq and support of new entrepreneurs and alumni to provide the much needed funding, George was optimistic that the acquisition of land to further research and development at Queen’s would happen.

- **Convincing companies to invest in Queen’s – Wayne Schnarr**

Presenting in Ron Commander’s absence, Wayne’s presentation outlined ideas re the needs of researchers to make successful pitches to companies for research contracts:

External Contracts - What can you deliver, can you deliver on time, are you competitive? Who owns any intellectual property developed under the contract?

Deliverables – Need department wide inventory of deliverables. What deliverables are unique, what deliverables require cooperation between chemistry professors and between departments? Collaboration is extremely critical in matching skills sets and unique deliverables to bring in company contracts.

Timing – As one project is probably only part of a group of projects, can’t be late. Timelines must be realistic but simply cannot be missed.

Intellectual Property – Should you expect to have any interest/ownership? Who designed the experiments? Were you asked to execute tasks or be creative? If not, don’t expect IP ownership.

Competition – Who is it? - other universities, CROs, internal corporate capabilities?

Competitive Costs – usually 25-30% overhead. Can the project be conducted with existing personnel, facilities and equipment? Is the company going to pay for training of new personnel? Universities that charge in excess of 35% for overheads are not competitive.

- **Plenary Discussion**

A dynamic interactive discussion followed this focus group. The following points were made:

- from his experience in the MARS Project in Toronto, you require government dollars to realize any profit in a research park (Wayne).
- deliverables must meet government-invested dollars and it is critical to build lasting relationships between government and university and between university and companies with contracts (George)
- contracts must not go bad - must be constant interactive technology and business relationship – research to development stage. The importance of education in the sciences within the university must also coincide with the education of business, like offering entrepreneurial management skills. (Jan)
- other universities offer a course on entrepreneurship, beginning with an idea, writing a business plan and becoming a company. Research can be an expense but the return on investment must be prevalent immediately to compete. The attitude and education of how to attract private investment must offer a business plan and return on investment now. Research is better focused when goal is in sight. (Nick)
- the mindset within university bureaucracies is a challenge. What might take 6 weeks at Dupont could take 18 months at Queen’s, but the return on investment remains a vital element (George)
- researchers see academic requirements for grants and are drawn to NSERC established relationships; the conundrum: “the right money” and “where the money comes from”. Perhaps there should be less focus on the \$\$ and more on the right reasons/deliverables when competing for contracts. (David)
- students have various biotechnical and biochemistry offerings (Barry)
- Queen’s must offer the right course offerings to meet industry needs and to also compete with U.S. \$\$\$. Boehringer-Ingelheim’s involvement with co-op programs helps both the students and the company. There is lots of demand for co-op students who can present projects, sell themselves and have a good business sense. They learn these skills during co-op placements. (Montse)
- the success of Parteq’s approach should be considered within the department. Parteq’s relationships remain healthy because of investment return. The CVs of the researchers would be strengthened by this same approach. (King)
- are there expectations of the faculty to do so much contract work? (Jamie) David responded that the challenges of department regulations, budget constraints and reduced faculty impede this initiative. Not all faculty participate in contract research.
- timing is critical before further damage is done. A modern curriculum is key to allow for a positive experience for science students so that they may be among the best trained in the country and able to compete well. (Dale)

George concluded by acknowledging the conundrum between the restraints and the needs of the Department, but was optimistic that the QCIC could help. In response to King’s question to John Molloy, he simply stated that the department of Chemistry needs more money in order to do more basic research and keep both students and faculty on campus. With the onset of the double co-hort and the fact that deregulation of tuition fees in Chemistry has not happened yet, other innovative ways of funding must be found immediately in order to remain competitive. Stan concurred that the only departments that will survive will be those that become less dependent on government dollars and more independent through their own sources of funding.

.....  
*10:00 - 10:20 Coffee Break*  
.....

## **Report on undergraduate curriculum and program redevelopment**

**Donal Macartney** presented overhead slides that outlined how the curriculum has been reviewed and will be revised in the hopes of helping to strengthen the quality and quantity of the programs and increase enrollment and student/faculty relations. New CSC accreditation rules and a new Faculty of Arts and Science credit system with program requirements will be introduced. He also addressed the declining resources for teaching, the changes in the teaching and research interests and the aging laboratory equipment. In response to Wayne's question, consultation with other departments has taken place and course offerings have been combined. An integrated and interdisciplinary approach to modern experimental chemistry will be emphasized.

David commended Donal's 20 years in the department and his major positive effect on the Curriculum Committee.

## **Report on development activities pertaining to UG program and Building Fund**

**Doug Puffer** provided a power point presentation, emphasizing the need to create new pockets of funding and become independent from government cutbacks. He noted the 2 fundraising priorities the Campaign for Queen's has embarked on – the new building goal of \$20M and the equipment endowment of \$2M. Funds for Chernoff Hall in the amount of \$8,039,000 are still needed. Doug said that \$60,000\* has been raised through the Davos Challenge. It has yielded 52 gifts, ½ of which are new donors. He emphasized the importance of matching gifts and affinity based fundraising. It is more direct coming from a colleague rather than a Dean. He also mentioned that in the case of Class Gifts '67, 15 people donated \$12K - well worth the effort.

*\*Addendum as of May 9 – the \$64,000 target has been reached through a closing gift of \$4,000.*

## **Focus #2: Donations of equipment for undergraduate laboratories**

- **Prioritized list of equipment needs – Doug Puffer**

Doug referred to the handout of a prioritized Equipment List, which will be posted to and kept up to date on the website [www.chem.queensu.ca](http://www.chem.queensu.ca). This dynamic list provides a promotional opportunity for donors.

- **Sources of donated equipment and acceptable criteria – Jamie Hallman**

Jamie asked Council members to consider their relationships with suppliers and manufacturers who might have equipment they would consider donating. He cautioned that the circumstances as to why it would be donated would have to be considered - it must be adequate for a university setting and not cost money to make functional and at the same time, we would not want to risk any potential backlash of a company's name being disparaged. He asked Council members to consider companies looking to upgrade to meet accreditation standards as well as companies winding down. **Jamie** offered to contact Water Scientific who have a re-conditioning program in place. **Wayne** will contact SYNSORB Biotech in Calgary re equipment in plant that is currently being sold (tax deduction may be as good as 10 cents on the dollar) and will also contact Jack Kay at Apotex re how they dispose of old equipment from their large lab system. Some discussion over the value of a tax receipt to a company versus them selling used equipment took place. David noted that there might be some salvage dollars to offer companies for used equipment. **Nick** also raised the possibility of acquiring used PCs from IBM. He will contact them regarding some 40,000 becoming availability

next summer. **King** offered to pay for the transportation of any used equipment from sponsors going to Queen's. He also raised the importance of a mechanism being in place in which someone is responsible for keeping the status of list updated. He suggested that along with the equipment list, a document be prepared that outlines the process of donating equipment. **Stan** offered to work as the department/council liaison. David also suggested that the new member \* to the department coming this summer would be ideal for assisting in this type of project.

*\*Addendum as of May 17 – Gregory Jerkiewicz, a new faculty member arriving in June 2002, has agreed to take over from Stan (on leave July-Dec. 2002) in the summer of 2002.*

• **Building an endowed fund – Kingsley Ward**

King noted that the lack of funds in Ontario has seriously eroded the base budgets, in support of education in Ontario, needed to provide high quality education and training. Queen's will tackle these challenges on a number of fronts: current campaign, ongoing search and requests for gifts, lobbying, tuition deregulation, contract research. A \$2M Endowment fund, accruing 5% interest, would generate \$100,000 annually. King talked about the concepts of fundraising for an Equipment Endowment versus annual gifts like the Davos Challenge and asked which would be better in light of immediate needs. Doug explained that annual contributions provide a small pot of immediate smaller size gifts, but empties fast, where as endowed funds provide a bigger pot from larger gifts. This larger pot never dries up, making 5% interest annually. Doug discussed that the process for donations is simple - all asks for gifts must be cleared through him first – so any collision with the same donors or anybody else seeking funds at Queen's is avoided. The Department of Development can support the QCIC with research, proposals, briefings, etc. Also noted was the available support from the current Campaign Cabinet for one more year and Leadership Volunteers, all well connected throughout the country (i.e. Toronto and Calgary). Barry pointed out that George Hood would be supportive and involved in asking for some of the larger gifts. King asked Council members to identify potential donors within their network and provide a list to Doug for discussion at the next meeting for support of this Endowment Fund.

• **Commitments from QCIC membership**

- will provide a list of potential donors to the Endowment Fund (Council liaison - Doug)
- will provide a list of potential sources for the Equipment List (Department liaison – Stan)
- will consider any research contract possibilities

.....  
12:00 - 1:00 Lunch  
.....

**Focus #3: Where is chemistry going & what is the Council's role**

• **External & internal framework & constraints – David Wardlaw**

David presented an overhead slide that outlined the following:

Undergraduate studies – enrolment up but tuition flat; new courses to be introduced but lab component may decrease due to funding pressures.

Graduate studies – enrolment up, but funding is flat

Research – increased level of research activity in Department; grant opportunities enhanced; contract opportunities but depend on researchers, economic climate

Budget – in decline since 1996; large scale grants and fund raising more important

Review of Department (Internal, OGCS, CSC) – “thumbs up”, strong department, budget is barrier

- **Undergraduate & graduate programs – Dale Cameron**

Dale presented a power point presentation addressing the following:

Students are the primary customers – competition choices – is Queen's offering the right selection?

Employers are the secondary customers – much bigger competition – must be diverse to supply students to all types of careers

Queen's Chemistry concentrations – on strengths? Is “doing it all”, conceivable let alone achievable?

Pure vs Applied? Academia vs on-the-job? A brief discussion revealed a contradiction in terms – research and development - and how this might create barriers.

Student Majority – will likely take 4-year degrees – will not sacrifice 5+ yrs without an established/recognized “co-op/intern” program. Should the University facilitate the process so the benefits are not outweighed by the process? Should Industry's role increase awareness of the advantages and build relationships so that students have diverse, interesting placements?

Queen's Chemistry has to serve two communities – 1. Students specializing in Chemistry and

2. Departments that require Chemistry in a support role

Queen's Chemistry must communicate its vision and strategy to potential students, existing students, alumni, other departments, administration and industry representatives

M.Sc and Ph.D roles – role of each? What are the skills sets that are taught/should be taught? What is the “world” looking for?

Building Leaders and Citizens for a Global Society – How do we do this while performing the “formal” task of educating in our discipline? What are the skill sets and values outside of Chemistry that we should teach? – leadership, communication, negotiation skills, critical thinking/objectivity, integrity/honesty, etc.

Role of Council – Help with the funding, build relationships between companies and the department, advise the department on needs of industries.

- **Research directions – Nick Darby**

Nick's power point presentation outlined the following observations:

In technology investment... follow the money – Pure Chemistry-based deals are rare and generally uninteresting; Chemistry is combining with Mathematics -> “Computational Chemistry”;

Biology -> “Medicinal Science” and Physics -> “Materials Science”

So... where is the money going? – money is following the changes in sciences – Government grants declining for Chemistry; Investments declining in chemical companies; Students moving to other disciplines. Quote from Cambridge-MIT Institute – “Research will focus largely on fields that have potential to influence substantially the future evolution of technology. Potential areas of collaboration include physics, biology, neuroscience, information technology, financial engineering, nanotechnology, bioengineering, microfabrication, and materials science.”

What to do? Good Option: Computational Chemistry – Raw computing power is cheap and new directions to its use are emerging, some relevant to Chemistry – GRAPEs, CombiChem, BioTech

Better Option: Materials Science – “quantized materials”: science of the very small

Best Option: Molecular Biology – future (& past) of organic chemistry; carbohydrates, lipids, proteins, nucleic acids – understood individually – How do these elements work together in living systems? (New university activities: Princeton, Stanford, Cornell, MIT, Harvard, London, *everywhere!*)

Successful departments – will choose a field of excellence, which the rest of the world cares about. Collaboration with other disciplines – including commercial ones – is now essential. The strategy of the Chemistry Department should be of setting goals around what it should bring and what it wants to bring of value to the world and providing expectations for return on this success.

Discussion followed and the following points were made:

- elements are extremely complex and more complicated and will form new disciplines. We must address what's the world interested in over the next 25-30 years in new research directions. (Nick)
- micro vs macro challenges - Universities must specialize. (Montse)
- with the need for more post-secondary education (up 35-40%), must concentrate on best and shed others, but administration at the higher level must also foresee this strategy (David)
- Chemistry Department must integrate with other disciplines and develop relationships with other departments to enjoy the benefits of the higher-level thinking. Stand-alone departments are no longer functionally adequate. (Jan)
- leverage using Parateq's success. In response to Wayne's question, Stan advised that the researchers own IP, but sign over to Parateq, thus department does not directly benefit. This raised questions over what incentive is there if no rewards?

Nick's presentation concluded with the fact that change must occur fast. Changing the research and educational focus to the BioSciences is a likely and lucrative outcome. Also, developing an interest, an understanding and focus on enterprise creation might be a distinguishing and lucrative activity. QCIC members, faculty and alumni could help here.

## **Next Meeting Date**

### **Friday, November 1 and Saturday, November 2, 2002**

The Friday QCIC meeting will be followed by a reception and dinner. Donors and QCIC members will be invited to this official opening of Chernoff Hall. The following day, Saturday, November 2 will be a public opening with a symposium in the morning following a Chemistry Department breakfast. (Speakers - Ron Breslow, Columbia University and Mariane White, Dalhousie). Guided tours will be offered throughout.

## **Adjournment**

David Wardlaw thanked everyone for a very productive meeting based on the 3 Focus Groups. He felt that the pre-meeting in March was very useful and should continue in planning the QCIC agendas. The idea of offering a course for the chemical professionals in the industry was discussed and could perhaps be offered by the summer of 2003. David will work further with Dale, Montse, Barry and Nick to investigate such a course.

### ***Addendum:***

*In sending his regrets for not being in attendance, Darwin Wilson announced May 10<sup>th</sup> that Dow Chemical (Canada) Inc. will provide 3 years of funding for the Chemistry Department's weekly seminar series. Kudos to Darwin for shepherding a proposal through the corporate ranks at Dow. Thanks to all at Dow for this commitment.*