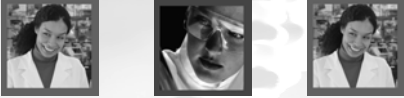


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**Change in Action:
The University of Waterloo
Experience**

Jake J. Thiessen, School of Pharmacy

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A City Embracing a University

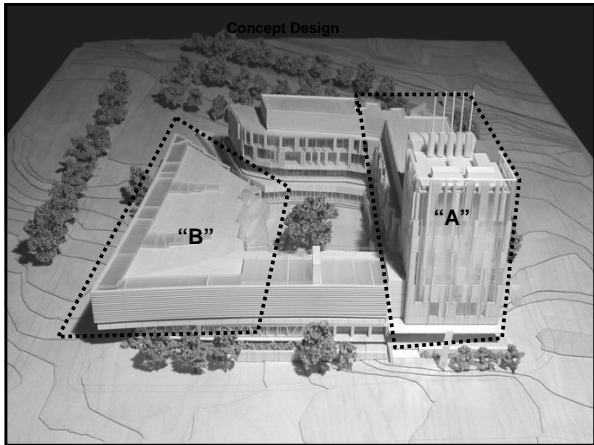
- * **Kitchener's desire to energize and revitalize a downtown site**
 - Former warehouse/business area
 - Sought a U Waterloo partnership
 - University Idea - a new HSC
- * **Exceptional local investment**
 - City of Kitchener - land, funds
 - Hallman Foundation
 - Region of Waterloo - medical program

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The Initial Challenge

- * **A blank slate**
- * **No fixed template for project**
- * **New non-university site**
- * **No customary health science disciplines**
- * **No building**
- * **No faculty**
- * **No staff**
- * **No program yet defined**









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**School of Pharmacy
Educational Ambitions**

- * Fundamental engagement ... "of the Community"
- * To attract creative, principled, risk-taking students
- * To engage students in Canadian life - Great Canadians
- * To see our students concerned for and experienced in the International or Underserved world
- * To graduate students with comprehensive (multidimensional) pharmaceutical understanding
- * To have our students equipped with extensive pharmaceutical healthcare experience in a multidisciplinary practice
- * To graduate students with Excellent adaptability to future Pharmacy Practice developments (eg. technology)

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Business Model for School

- * 480 undergraduate students
 - 4 year Hons BSc Pharm degree
- * 70 graduate students
 - MSc and PhD
- * 30 Faculty
 - 16 "wet bench" scientists
 - 14 "dry" scientists/clinicians
- * Staff
 - 20 support staff
 - Array of educators/clinicians

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Educational Elements

- * Advanced entry requirements
- * All students interviewed
- * A co-op based Pharmacy program
 - 7 academic terms and 4 co-op terms

A A C A C A C A C A A - 4 month terms

- * First class began studies in January, 2008
- * Vanguard class presently in second co-op
- * Engaging the McMaster University School of Medicine
 - Co-located in Pharmacy complex - program launched December, 2007
- * Also co-located with Optometry clinic and research programs

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Educational Ambition (cont'd)

- * Diversity: committed to identifying and supporting students with interests in a range of professional career paths
- * Comprehensive medication management education
- * Business/management and informatics exposure for all
- * Increased room for seminars & electives
 - Public health
 - Cosmetics
 - Nutrition; alternative therapies
- * Integrated involvement with the community: engaging society

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Curriculum Snapshot

- * Integrated, Patient Focused Care
 - * 9 semesters
- * Topical Seminar Program
- * Community Engagement - "*Engaging people to Inspire Change*"
 - Students to experience the fabric of society - each Canadian is first a person (not just a person with a health problem)
 - Students engaged in resolving human and community needs; a plan integrated with curriculum
 - 21 capacity-building projects

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Community Engagement Projects

- * **K-W Multicultural Centre**
 - Project to engage ethno-cultural youth in local volunteerism: research, outreach, reporting
- * **YWCA Mary's Place**
 - Design and provide weekly organized activities (games, crafts, educational workshops) for homeless women and families in the shelter
- * **K-W Habilitation Services**
 - Engagement in medication policy for 23 group homes, development of training resources

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First Experiential via Co-op 2008 Employment Positions Posted

Type	Total	%
Community Pharmacy	75	61.4
Pharmacy Chain – Head Office	1	0.8
Hospital	25	20.5
Family Health Team	4	3.3
Pharmaceutical Industry	5	4.1
Government	7	5.7
Professional Association	2	1.6
Academia/Research	2	1.6
International	1	0.8
Total	122	100

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Campus Engaged in Health Care

- * Initial facility to include a full-service family health clinic
 - A real-world context to implement optimal pharmacotherapy in primary care
- * Dynamic new opportunities for integrated learning among healthcare professionals: pharmacy, optometry and medicine
- * Focused inter-professional models of care, education, and research (e.g. Geriatrics)
- * Particular emphasis on advancing the agenda of personalized therapeutics

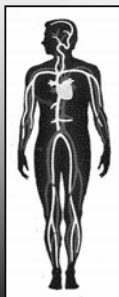
Pursuing Optimal Therapeutics

- * Unfulfilled treatment promises; unsuccessful treatments
- * Trial and Error "experimentation"
 - High incidence of adverse effects - "adverse drug reactions (ADRs) is estimated to cost the US society <100 billion USD and over 100 000 deaths per year"
 - Canadian problems - 1.7 Million ER visits annually
- * Worrying multiplicity of treatments, notably in the elderly
- * Burdensome and growing expenditures
 - * \$170 Billion spent on healthcare and growing
 - * \$30 Billion spent on medications

Therapeutic Determinants Affecting Optimized Pharmacotherapy



Commitment: Individualized Therapeutics




- * Engaging and understanding the individual patient
- * Assembling the right identity information
- * Using the most appropriate drug(s)
- * In the correct context
- * The optimal dose
- * The correct pharmaceutical product
- * The appropriate route
- * The correct dosing schedule
- * Employing effective communication
- * Achieving the best compliance
- * Making the right outcome assessment

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Collaborative Research Innovation at the Interface of Society

- * A knowledge powerhouse - tackling societal problems
- * Engaging a variety of disciplines to expand skills and capabilities
- * Integrated into a healthcare motive - local test site


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Center for Individually Responsive Systems (CIRTS)

Canadian Foundation for Innovation

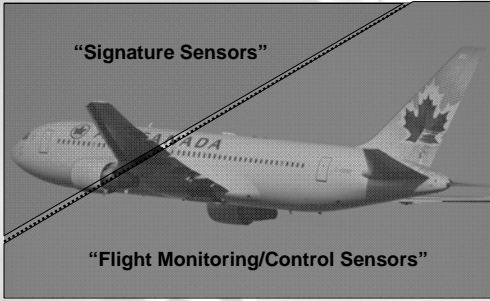
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CIRTS: Objectives

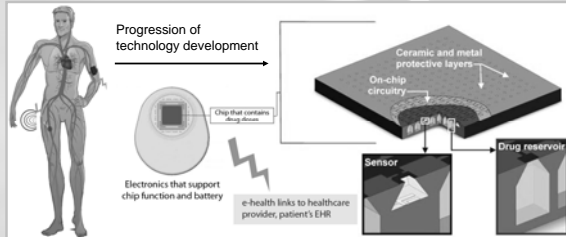
- * Develop and progressively implement a new paradigm of healthcare.
- * This new paradigm will revolutionize how personal health and wellness is sustained and treatment applied and monitored.
- * Harness broad interdisciplinary scientific teams that will have converging set of skills to achieve objectives.

Technology Future for Pharmacotherapy



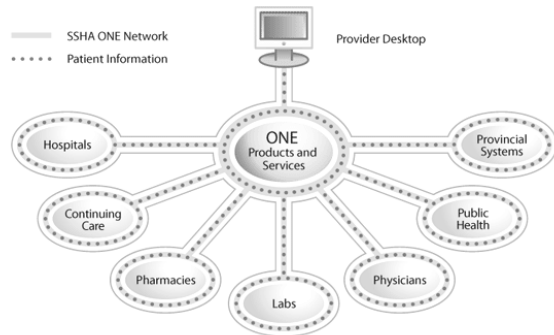
• There are 117 miles (188 km) of electrical wiring in a 767-300ER.
 • Also, about 10,000 sensors are constantly recording information, not only to inform pilots about the plane's performance but also to forecast mechanical problems that can be corrected during routine maintenance

Integrating Diagnostics & Therapeutic Devices



Adapted from Staples M, Daniel K, Cima MJ, Langer R. 2006, Application of Micro- and Nano-Electromechanical Devices to Drug Delivery, *Pharmaceutical Research* 23:847-63.

Smart Systems for Health Agency (SSHA)



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UW Change in Action:
Innovations in Pharmacy Education and Research



Equipping Engaging Experiencing Inspiring
