



# Karyn Ho

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 karynho.com

## EDUCATION

### **MScBMC**

2012-2014

### **Biomedical Communications Program, Visualization Design Field**

Institute of Medical Science/Faculty of Medicine

University of Toronto, supervised by Lecturer Michael Corrin

### **PhD**

2005-2012

### **Targeted Drug Delivery to Breast Cancer Using Polymeric Nanoparticle Micelles**

Department of Chemical Engineering and Applied Chemistry

Collaborative with the Institute of Biomaterials and Biomedical Engineering

University of Toronto, supervised by Prof. Molly Shoichet

### **BASc**

2000-2005

### **Department of Chemical and Biological Engineering**

Faculty of Applied Science

University of British Columbia

## EMPLOYMENT EXPERIENCE

### **Communications Specialist**

2014-present

Toronto, ON

### **Online Content and Social Media Development for Public Science Outreach**

Research2Reality Online Showcase of Canadian Science Research

- Researching and writing weekly news articles and text to accompany video interviews
- Engaging the public through social media channels with over 1,500 total followers via links to original content and breaking Canadian science news

### **Senior Manager**

2014-2015

Thornhill, ON

### **3D Multimedia and New Business Development**

Mechanisms in Medicine, Core Health Services, Prime Medic/Animated Patient Series

- Researched and produced healthcare animations (patient education, MOD), including script writing, 3D modeling, and compositing
- Worked with foundations and continuing medical educators to identify areas of interest and develop content and communication strategies
- Obtained \$70k USD in grant funding approvals

### **Summer Intern**

2013

Toronto, ON

### **Institute of Medical Science Research Video Pilot Series**

University of Toronto/Institute of Medical Science

- Interviewed and filmed researchers for editorial video series for student recruitment
- Edited interviews and B-roll footage into 3-minute HD videos for web publication

### **Research Assistant**

2005

Vancouver, BC

### **Optimization of DNA/LNA Sequences for a Universal Microarray Platform**

University of British Columbia/Michael Smith Laboratories

- Designed oligonucleotide sequence to assay enzyme activity using FRET
- Tested spotting and hybridization conditions for short nucleic acid probes

### **Process Engineer (Co-op)**

2004

Prince George, BC

### **In-line Chlorate Analysis and Enzymatic Pulp Pre-bleaching in Kraft Pulping**

Canfor Northwood Pulp Mill/Fibreline and Steam/Recovery

- Calibrated in-line chlorate analyzer and trained personnel on offline titration
- Gathered pre-trial data in brownstock storage for enzymatic degradation

## EMPLOYMENT EXPERIENCE (continued)

- |  |   |
|--|---|
| <b>Research Assistant</b><br>2003<br>Vancouver, BC           | <b>Non-Cyanide Gold Leaching Strategy for Low Grade Ores</b><br>Placer Dome Research Centre/Hydrometallurgy <ul style="list-style-type: none"><li>• Performed gold leaching in 20' irrigated column and crib environments</li><li>• Prepared crib shutdown procedure and drilled core sampling instructions</li></ul>   |
| <b>Biochemical Engineer (Co-op)</b><br>2002<br>Vancouver, BC | <b>Optimization of Expansion Conditions for Hematopoietic (Blood) Stem Cells</b><br>University of British Columbia/Biotechnology Laboratories <ul style="list-style-type: none"><li>• Investigated effects of media composition on proliferation of human cell lines</li><li>• Tested impact of seeding density and inoculum concentration on growth rate</li></ul> |

## SHORT-TERM INDEPENDENT CONTRACTS

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|---|---|
| <b>Medical Animator</b><br>2015-present<br>Boston, MA | <b>3D Animation for Food Allergen Detection System</b><br>Allergy Amulet <ul style="list-style-type: none"><li>• Produced 3D molecular animation from script to screen to describe technology for rapid point-of-consumption detection of food allergens</li></ul>                                    |
| <b>Graphic Designer</b><br>2015<br>Toronto, ON        | <b>Graphic Design for Healthcare App</b><br>INVIVO Communications <ul style="list-style-type: none"><li>• Designed layout for healthcare app using copy deck and functional specifications</li></ul>  |
| <b>Independent Contractor</b><br>2013<br>Toronto, ON  | <b>Toronto Notes Medical Reference Textbook</b><br>University of Toronto/Faculty of Medicine <ul style="list-style-type: none"><li>• Created original illustration of arterial blood supply to the hand</li><li>• Co-designed stethoscope cover image in collaboration with a mosaic artist</li></ul> |

## ORIGINAL RESEARCH AND REVIEW PUBLICATIONS

- Ho KS**, Shoichet MS (2013). Design Considerations of Polymeric Nanoparticle Micelles for Targeted Chemotherapeutic Delivery. *Current Opinion in Chemical Engineering*, 2(1): 53-59.
- Ho KS**, Poon PC, Owen SC, and Shoichet MS (2012). Blood vessel hyperpermeability and pathophysiology in human tumour xenograft models of breast cancer: a comparison of ectopic and orthotopic tumours. *BMC Cancer*, 12: 579.
- Ho KS**, Aman AM, Al-awar RS, and Shoichet MS (2012). Amphiphilic micelles of poly(2-methyl-2-carboxytrimethylene carbonate-co-D,L-lactide)-graft-poly(ethylene glycol) deliver anti-cancer drugs to solid tumours. *Biomaterials*, 33(7): 2223-2229.
- Shi M, **Ho K**, Keating A, and Shoichet MS (2009). Doxorubicin-conjugated immuno-nanoparticles for intracellular anticancer drug delivery. *Advanced Functional Materials*, 19(11): 1689-1696 (frontispiece article).
- Ho K**, Lapitsky Y, Shi M, and Shoichet MS (2009). Tunable immunonanoparticle binding to cancer cells: thermodynamic analysis of targeted drug delivery vehicles. *Soft Matter*, 5(5): 1074-80.
- Shi M, Wosnick JH, **Ho K**, Keating A, and Shoichet MS (2007). Immuno-polymeric nanoparticles by Diels-Alder chemistry. *Angewandte Chemie International Edition*, 46(32): 6126-6131.

## PUBLISHED SCIENTIFIC ILLUSTRATIONS

- |                    |  |
|--------------------|--|
| <b>Front Cover</b> | <b>Ho K</b> and Tam RY (2012). <i>Journal of Materials Chemistry</i> , 22. |
| <b>Front Cover</b> | <b>Ho K</b> and Nimmo CM (2011). <i>Bioconjugate Chemistry</i> , 22(11).   |
| <b>Front Cover</b> | <b>Ho K</b> and Wylie RG (2011). <i>Nature Materials</i> , 10(10).         |

## PUBLISHED SCIENTIFIC ILLUSTRATIONS (continued)

<b>Front Cover</b>	<b>Ho K</b> and Hsieh A (2010). <i>Macromolecules</i> , 43.
<b>Frontispiece</b>	<b>Ho K</b> and Shi M (2009). <i>Advanced Functional Materials</i> , 19(11).

## TEACHING EXPERIENCE

<b>Teaching Assistant</b> 2013 Mississauga, ON	<b>Written Communication for Health Care</b> (HSC 300: 20 students) University of Toronto at Mississauga/Department of Biology <ul style="list-style-type: none"><li>Delivered guest lectures on grant writing and visual enhancement of information</li><li>Graded student research documentation for patient education booklets</li></ul>
<b>Communication Instructor</b> 2012-2013 Toronto, ON	<b>Engineering Portfolio</b> (CHE 397, CIV 382, and MIE 297: 5-25 students) University of Toronto/Engineering Communications Program <ul style="list-style-type: none"><li>Assisted students to curate and revise portfolios of engineering work and professional documents for inclusion in job applications</li></ul>
<b>Teaching Assistant</b> 2013 Toronto, ON	<b>Engineering Science Thesis</b> (ESC 499: 25 students) University of Toronto/Engineering Communications Program <ul style="list-style-type: none"><li>Evaluated student presentations of undergraduate thesis projects</li></ul>
<b>Head Teaching Assistant and Teaching Assistant</b> 2007-2009 Toronto, ON	<b>Engineering Communication</b> (CHE 298: 30 students) University of Toronto/Department of Chemical Engineering and Applied Chemistry <ul style="list-style-type: none"><li>Organized visits to 5 local elementary schools for 100 student presenters</li><li>Worked with students to define teaching objectives and lesson plans for school visits</li><li>Facilitated interactive lessons in public speaking and visual aid design</li></ul>
<b>Seminar Facilitator</b> 2008-2009 Toronto, ON	<b>Engineers in Society</b> (ESC 202 and 400: 20 students) University of Toronto/Division of Engineering Science <ul style="list-style-type: none"><li>Solicited debate on ethics topics in engineering using a variety of techniques</li><li>Executed original lessons on topics such as sustainability and public policy</li></ul>
<b>Teaching Assistant</b> 2006-2007 Toronto, ON	<b>Reactor Design</b> (CHE 333: 30 students) University of Toronto/Department of Chemical Engineering and Applied Chemistry <ul style="list-style-type: none"><li>Graded and led tutorial sessions covering content in assigned problem sets</li></ul>
<b>Teaching Assistant</b> 2006-2007 Toronto, ON	<b>Biomedical Engineering Laboratory Techniques</b> (BME 340: 20 students) University of Toronto/Institute of Biomaterials and Biomedical Engineering <ul style="list-style-type: none"><li>Supervised 4-hour experiments incorporating common methods in biotechnology, including ELISA, PCR, microscopy, and aseptic cell culture</li></ul>

## LEADERSHIP AND PROJECT MANAGEMENT POSITIONS

2013-2014	Conference Chair, Biocommunication Academic Meeting (Student Exchange)
2012-2014	Class representative, Biomedical Communications Class of 2014
2010	Host, University of Toronto Lectures at the Leading Edge (David Tirrell)
2007	Conference Co-Chair, Ontario-Quebec CScE Biotechnology Meeting
2006-2007	Co-Chair, Student Meet Mentor, TERMIS 2007 Conference and Exposition
2002-2005	External Affairs/Curriculum Representative, CHBE Undergraduate Executive
2002-2003	Chemistry/Design/Fundraising, Reaction Car Design Team
2002-2003	Chair, Paper Competition, AIChE Northwest Regional Student Conference
2002-2003	Chair, Fundraising/Destinations, UBC CHBE Third Year Field Trip

## SYMPOSIA AND INVITED TALKS

- Ho KS\*** (2015). Reality in Virtual Representations of Science. *University of Toronto Mississauga Biomedical Communications Research Stream Faculty Search*. Mississauga, ON (Institutional).
- Ho KS\***, Shoichet MS, and Corrin MC (2014). Visual integrity at the nanoscale: Animating nanoparticles for targeted anti-cancer drug delivery. *Association of Medical Illustrators Annual Meeting*, Rochester, MN (International).
- Ho KS\***, Shoichet MS, and Corrin MC (2014). Visualizing the Nanoscale: A 3D animation of targeted anti-cancer drug delivery using polymeric nanoparticles. *Association of Medical Illustrators Board of Governors Meeting*, Mississauga, ON (International).
- Shoichet, MS, Lu J, **Ho K\***, Owen S, Chan D, and Logie J (2012) Polymeric Nanoparticles for Targeted Chemotherapeutic Delivery. *Canadian Society for Chemistry*, Calgary, AB (National).
- Shoichet MS\*, Lu J, **Ho K**, Owen S, Aman A, Al-awar R, Tonikian R, and Sidhu S (2010). Polymeric Immunonanoparticles for Targeted Delivery. *Pacificchem*, Honolulu, HI (International).
- Shoichet MS\*, Shi M, **Ho K**, and Lu J (2008). Polymeric nanoparticles for targeted delivery in cancer. *American Chemical Society National Meeting*, New Orleans, LA (International).
- Shi M\*, **Ho K**, and Shoichet MS (2007). Polymeric nanoparticles designed for targeted delivery in anticancer drugs. *American Chemical Society Meeting*, Boston, MA (International).
- Shi M, **Ho KS**, Kang CE, and Shoichet MS\* (2007). Biology-Inspired Polymer Design. *33rd Canadian High Polymer Forum*, Gananoque, ON (National)
- Shi M\*, **Ho K**, and Shoichet MS (2007). Immuno-Polymeric Nanoparticles for Targeted Delivery of Anticancer Drugs. *Chemical Biophysics Conference*, Toronto, ON (National).
- Ho K\***, Shi M, Lapitsky Y, Keating A, and Shoichet MS (2007). Modeling binding behaviour of anti-HER2 immunonanoparticles using Langmuir isotherms. *University of Toronto Institute of Biomaterials and Biomedical Engineering Scientific Day*, Toronto, ON (Institutional).
- Ho K\***, and Shoichet MS (2007). Herceptin and Interleukin-2 Immunotherapy for Breast Cancer. *University of Toronto Nanoclub Research Seminar*, Toronto, ON (Institutional).
- Ho K\***, Lamoureux S\*, Lau K\*, Lu E\*, Bailey-Romanko A, Berton J, Lee M, Nookala S, Sunaryo J, and Sutherland N (2005). Acid Mine Drainage Remediation: Britannia Water Treatment Plant. *CSCHE/SNC Lavalin Plant Design Competition*, Toronto, ON (National).

## POSTER PRESENTATIONS

- Ho KS\***, Shoichet MS, and Corrin MC (2014). Visual integrity for subvisible systems: Updating the visual representation of nanoparticles for targeted anti-cancer drug delivery. *Association of Medical Illustrators Annual Meeting: Vesalius Trust Poster Session*, Rochester, MN (International).
- Ho KS\***, Shoichet MS, and Corrin MC (2014). Visualizing the Nanoscale: A 3D animation of targeted anti-cancer drug delivery using polymeric nanoparticles. *University of Toronto Mississauga Research Night*, Mississauga, ON (Institutional).
- Ho K\***, Aman A, Al-awar R, and Shoichet MS (2010). Herceptin Immunonanoparticles for Targeted Drug Delivery: Cellular Binding and Tumour Targeting. *Symposium on Biomedical Polymers for Drug Delivery*, Salt Lake City, UT (International).
- Ho K\***, Shi M, Lapitsky Y, Kosaka Y, Keating A, and Shoichet MS (2009). Design and Characterization of a Nanoscale Polymeric Platform for Targeted Delivery of Anticancer Drugs. *Ontario Centres of Excellence Discovery*, Toronto, ON (Provincial).

## POSTER PRESENTATIONS (continued)

- Ho K\***, Lapitsky Y, Shi M, and Shoichet MS (2008). Thermodynamic analysis of immunonanoparticle binding to cancer cells: tuning binding affinity for targeted drug delivery. *Nanomedicine and Drug Delivery Symposium*, Toronto, ON (International).
- Ragupathi L\*, **Ho K**, McLean D, and Shoichet MS (2008). Enhanced Stability of Self-Assembled Polymeric Nanoparticles During Freeze-Drying. *University of Toronto Undergraduate Engineering Research Day*, Toronto, ON (Institutional).
- Shi M, **Ho K\***, and Shoichet MS (2007). Targeted Delivery of Anticancer Drug Interleukin-2 by Polymeric Immunonanoparticles. *Tissue Engineering and Regenerative Medicine International Society - North American Meeting*, Toronto, ON (International).
- Shi M\*, **Ho K**, and Shoichet MS (2007). Immuno-nanoparticles by Diels-Alder Chemistry. *Society for Biomaterials*, Chicago, IL (International).
- Ho K\***, Shi M, Keating A, and Shoichet MS (2007). Targeted Co-Delivery of Trastuzumab and Interleukin-2 for Breast Cancer Immunotherapy. *98<sup>th</sup> American Association for Cancer Research Annual Meeting*, Los Angeles, CA (International).
- Ho K\***, Baumann MD\*, Kang CE\*, Wylie RG, and Shoichet MS (2006). Biology Inspired Polymer Design. *University of Toronto Chemical Engineering Graduate Research Symposium*, Toronto, ON (Institutional).

## AWARDS AND GRANTS

2014	University of Toronto School of Graduate Studies Conference Grant	\$900
2014	Vesalius Trust Research Scholarship	\$1 000
2012-2014	CIHR Health Research Communications Award	\$35 000
2013	Association of Medical Illustrators Award of Excellence, Student Editorial	-
2012	Institute of Medical Sciences Entrance Award	\$5 000
2012	Helen L Cross (nee Colquhuon) Memorial Graduate Scholarship	\$2 000
2011	Irving O. Shoichet Graduate Scholarship	\$2 000
2009-2011	University of Toronto Doctoral Thesis Completion Grant	\$7 120
2009-2010	DuPont/Ontario Graduate Scholarship in Science and Technology	\$15 000
2006-2009	NSERC Postgraduate Doctoral Scholarship	\$63 000
2007	Helen L Cross (nee Colquhuon) Memorial Graduate Scholarship	\$2 000
2007	First Place, University of Toronto IBBME Scientific Day Oral Paper	\$100
2005-2006	NSERC Canada Graduate Master's Scholarship	\$17 500
2005	First Place, SNC Lavalin National Plant Design Competition	\$1 000
2005	NSERC Undergraduate Summer Research Award	\$4 500
2004-2005	Ecowaste Industries Scholarship	\$900
2004-2005	Ying Ying Chan Zee Scholarship	\$275
2004	Association of Professional Engineers and Geoscientists BC Scholarship	\$500
2004	First Place, AIChE Regional Reaction Car Design Competition	\$250
2002-2003	41st Canadian Chemical Engineering Conference Scholarship	\$2 000
2000-2003	University of British Columbia Undergraduate Scholar Program	\$7 500
2002	NSERC Undergraduate Summer Research Award	\$4 500
2002	Charles and Jane Banks Scholarship	\$500
2001-2002	Chemical Engineering Entrance Scholarship	\$750
2000-2001	Norman Mackenzie Alumni Entrance Scholarship	\$2 000
2000	Governor General's Award/Bronze Academic Medal	-

## SPECIAL SKILLS

<b>Scientific Expertise</b>	Anatomy, Drug Delivery, Biomaterials, Regenerative Medicine, Applied Science
<b>Communication</b>	Animation, Graphic Design, Data Visualization, Illustration, Layout, Audience Analysis, Technical Writing
<b>Preproduction</b>	Content Development, Storyboarding, Script Writing, Sketching, Wireframing
<b>Computer Graphics</b>	2D: Adobe Illustrator, Adobe Photoshop 3D: Autodesk Maya, Autodesk Mudbox, Maxon Cinema 4D, OsiriX, 3D Coat
<b>Videography</b>	Digital SLR, Light Kit, Video Tripod, Lavalier Microphone
<b>Editing/Compositing</b>	Adobe Premiere Pro, Adobe After Effects, Adobe Audition
<b>Web Design</b>	HTML, CSS

## PROFESSIONAL MEMBERSHIPS

2013-present	Association of Medical Illustrators (AMI)
2013	ACM Special Interest Group on Computer Graphics (SIGGRAPH), Toronto Chapter
2012	Chemical Institute of Canada (CIC)
2007	Tissue Engineering and Regenerative Medicine International Society (TERMIS)
2005	Canadian Society for Chemical Engineering (CSChE)
2004	American Institute of Chemical Engineers (AIChE)

## COMMUNITY AND OUTREACH ACTIVITIES

2014	Judge and 3D Animation Workshop Leader, Peel Animation Festival
2012-2013	Coordinator, Biomedical Communications Holiday Charity Drive
2010	Enbridge/United Way CN Tower Stair Climb
2005-2010	Rick Hansen Wheels in Motion Walk/Corporate Relay for Spinal Cord Injury
2009	Coordinator, Lessons in Chemical Engineering for Elementary School Students
2007-2008	Princess Margaret Hospital 5k Run/Walk to Conquer Cancer
2006-2007	Mentor, University of Toronto Graduate Recruitment Weekend
2006	Judge, Toronto Science and Technology Fair
2001-2002	Mentor, Imagine UBC First Year Orientation Group
2001	Facilitator, University of British Columbia Physics Olympics