CURRICULUM VITAE

Ryan Wylie, Ph.D.

Department of Chemistry and Chemical Biology
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EDUCATION

Doctor of Philosophy, Chemistry 2011
University of Toronto, Department of Chemistry, Toronto, Canada
Supervisor: Prof. Molly S. Shoichet

Bachelor of Science, Honours Biochemistry 2005
Concordia University, Department of Chemistry and Biochemistry, Montreal, Quebec, Canada
Thesis supervisor: Prof. Dmitrii Perepichka

Diplôme d'études collégiales, Natural Science 2001
Champlain Regional College, St. Lambert, Quebec, Canada

CURRENT STATUS

Assistant Professor, Department of Chemistry and Chemical Biology, McMaster University

Member, School of Biomedical Engineering, McMaster University

PROFESSIONAL ORGANIZATIONS

Canadian Society for Chemistry
Canadian Society for Chemical Engineering
Canadian Biomaterials Society
American Chemical Society

EMPLOYMENT HISTORY

a. Academic

Assistant Professor, Department of Chemistry and Chemical Biology, McMaster University (July 2014 to present)

Postdoctoral Fellow, Koch Institute, Massachusetts Institute of Technology, Department of Anesthesia, Boston Children's Hospital (Nov 2011 to June 2014)
Supervisors: Profs. Daniel S. Kohane and Robert S. Langer

b. Research scientist

Institut National de la Recherche Scientific - Énergie, Matériaux et Télécommunication (Varennes, QC). Synthesis of thiophene oligomers. (May 2004 to Aug 2005)

Methylgene Inc. (Montréal, QC). Design and synthesis of β-lactamase inhibitors. (Sept 2003 to Dec 2003)

Delmar Inc. (Montréal, QC). Optimization of chemical reactions and purification of paclitaxel from the Canadian yew tree. (May 2002 to Apr 2003)

AREAS OF INTEREST

- Immuno-engineering: Local and sustained intracranial delivery of bi-specific T cell engagers (BITEs), local delivery of cytotoxic T cells for immune-mediated tumor killing, multivalent polymers for selective T cell mediated tumor killing.
- Local protein delivery from hydrogels: Controlled protein release from hydrogels, competitive affinity release, displacement affinity release, biomolecular interactions, antibody therapeutics, bispecific T cell engagers.
- Non-fouling hydrogels and surfaces: Zwitterionic polymers, controlled hydrogel degradation, in situ gelling hydrogels, low-swelling hydrogels, bimodal surface polymer architectures, improving polymer grafting density on surfaces, poly(carboxybetaine), poly(oligo(ethylene glycol) methyl ether methacrylate).
- Cell-hydrogel constructs: Biomolecule immobilization, spatial and temporal biomolecule patterning, two-photon photochemistry micropatterning, biochemical environments to influence cellular activities, regenerative medicine, cell delivery, T cell delivery, 3D bioprinting, bio-inks.
- Blood filtration: Bioreactors, surface modification, non-fouling surfaces, antibody immobilization, modulation of cytokine storm, sepsis.

HONOURS

Co-awarded the Leadership in Teaching and Learning Fellowship	2018
University of Toronto Inventors of the Year (co-recipient)	2013
Banting Postdoctoral Fellowship ($140,000)	2012-2014
NSERC Postdoctoral Fellowship ($80,000; declined)	2012-2014
FQRNT Postdoctoral Fellowship ($60,000; declined)	2012-2014
FQRNT – Doctoral Research Scholarship ($46,667)	2007-2009
Vision Science - Doctoral Research Scholarship ($27,500)	2006-2009
Recruitment Award U of T ($5,000)	2005
FQRNT - Master's Research Scholarship ($30,000)	2005-2007
NSERC USRA (INRS-EMT)	2004
NSERC USRA (Methylgene)	2003
NSERC USRA (Delmar)	2002

COURSES

a. Undergraduate

CHEM 2OD3 and CHEMBIO 2OB3
Organic Chemistry II – Department of Chemistry and Chemical Biology
2015-2020

CHEMBIO 3P03
Biomolecular Interactions – Department of Chemistry and Chemical Biology
2015-2020

b. Graduate

BME 706
Biomedical Engineering Core II
2016, 2018, 2019, 2020 Winter, 2020 Fall

CHEM 799
Bioconjugate chemistry for the real world – Department of Chemistry and Chemical Biology
2017, 2019

CONTRIBUTIONS TO TEACHING

CHEMBIO 3PO3 – Developed the first pharmacokinetic module for 3rd year Chemical Biology undergraduate students.

CHEM 799 – Developed a graduate module for chemistry and chemical biology students focusing on polymer-protein conjugates and materials for immuno-modulation

BME 706 – Developed a graduate module for biomedical engineering students focusing on materials for cancer immunotherapies.

EXTERNAL RESEARCH FUNDING

Overhead has been removed, figures represent full dollar amounts available for research.

Awarded as lead PI since 2015: $1,897,270 (operating: $1,501,326; equipment: $395,944)

Awarded as co-applicant or collaborator since 2015: $354,399 (operating: $204,500; equipment: $149,899)

Boldface indicates lead PI, (%) indicates percentage distributed to Wylie lab.

AWARDED:

Wylie RG, Singh S. CIHR Project Grant 2020-2025
$ 692,326 (80%), 5 years, operating funds
Title: Engineering solid tumors for bispecific immunotherapies through controlled delivery

Wylie RG, Rullo A. Canada Research Society. 2020-2022
$120,000 (50%), 2 years, operating funds
Title: Multi-Antigen T cell Engagers (MATEs) for targeting cancer heterogeneity

Wylie RG. NSERC Alliance COVID. 2020-2021
$50 000 (100%), 1 year, operating funds
Title: Intranasal delivery of neutralizing antibodies for prophylatic COVID-19 treatment

Schertzer J, Surette M, Wylie RG, Cranston E. New Frontiers Research Fund (Tri-council: NSERC, CIHR, SSHRC) 2020-2022
$200 000, 2 years, operating funds
Title: Developing microbial substrate traps to combat diabetes and fatty liver disease

Wylie RG, Singh S. New Frontiers Research Fund (Tri-council: NSERC, CIHR, SSHRC) 2019-2021
$200 000 (85%), 2 years, operating funds
Title: Immuno-engineering the brain with hydrogel-nanoparticle composites to improve glioblastoma immunotherapies

Wylie RG, Rullo A, Singh G. Prostate Cancer Canada – Discovery Grant 2019-2021
$197 000 (60%), 2 years, operating funds
Title: Avidity based targeting: Immune recruiting polymers for prostate cancer immunotherapy

Melacini G, Burrows L, Coombes B, Ghosh R, Wylie RG, Berti P, Bishop R, Whitney J, Andres S. 2019
$149 899, equipment funds
Title: Integrated liquid chromatography multi-angle light scattering system to measure absolute masses and stoichiometries of biological assemblies in solution

Wylie, RG. NSERC Engage with Nicoya Lifesciences 2018
$25,000 (100%), 6 months, operating funds
Title: Enhanced LSPR sensitivity for OpenSPR detection of therapeutic antibodies and polymer antibody conjugates.

Wylie, RG. NSERC Engage with Aspect Biosystems Inc. 2017
$25,000 (100%), 6 months, operating funds
Title: 3D bioprinted cell seeded POEGMA hydrogels as tissue mimics

Wylie RG. NSERC – Discovery Grant 2015-2021
$150,000 (100%), 6 years, operating funds
Title: Dynamic biomaterials to study, manipulate and screen cell-matrix interactions

Wylie RG. CFI. Infrastructure Operating Fund 2016
$42,000 (100%), operating funds
Title: Developing biomaterials to manipulate and study cell-matrix interactions

Wylie RG. CFI. John R. Evans Leaders Fund 2015
$197,972, equipment funds
Title: Developing biomaterials to manipulate and study cell-matrix interactions

Wylie RG. MRI-ORF for small infrastructure 2015
$197,972, equipment funds
Title: Developing biomaterials to manipulate and study cell-matrix interactions

Brennan J. CREATE Biointerfaces Training Program 2011-2016
$4,500/year, 1 year, co-op student salary

APPLIED FOR:

Wylie RG. Ontario Early Researcher Award 2019
$30,000/year, 5 years
Title: Intracranial cancer immunotherapies for glioblastoma
**Results delayed due to COVID-19 – announcement expected at the end of 2020.*

PUBLICATIONS

ǂ indicates equal contribution, * indicates corresponding author.
Italics and **bold** indicate Wylie lab undergraduate and graduate students, respectively.

a. Peer-Reviewed Publications

i) Journal Articles

26. **Jesmer A**, Wylie RG* (2020). Controlling experimental parameters to improve characterization of biomaterial fouling. *Frontiers in Chemistry: Rising Stars 2020*. (accepted)

25. **Jesmer A, Huynh V**, Wylie RG* (2020). Fabrication of low-fouling, high-loading polymeric surfaces through pH-controlled RAFT. RSC Advances (accepted).

24. Ahmed R., Huang J., Khondker A., Rheinstadter M.C., **Huynh V**., Wylie R.G., Akimoto M., Bozelli J.C., Epand R.M., Melacini G.* (2020) Molecular Mechanism for the Suppression of Alpha Synuclein Membrane Toxicity by an Unconventional Extracellular Chaperone. *Journal of the American Chemical Society*. 142, 21, 9686-9699.

23. Vora, P., Venugopal, C., Salim, S.K., Tatari, N., Bakshinyan, D., Singh, M., Seyfrid, M., Upreti, D., Rentas, S., Wong, N., Williams, W., Qazi, M.A., Chokshi, C., Ding, A., Subapanditha, M., Savage, N., Mahendram, S., Ford, E., Adile, A.A., Mckenna, D., McFarlane, N., **Huynh, V.**, Wylie, R.G., Pan, J., Bramson, J., Hope, K., Moffat, J., Singh, S.K.* (2020) The rational development of CD133-targeting immunotherapies for glioblastoma. *Cell Stem Cell*. 26, 6, 832-844.e6

22. **Huynh V,** Wylie RG*. (2019) Displacement affinity release of antibodies from zwitterionic hydrogels. *ACS Applied Materials & Interfaces*. 11, 30648-30660.

21. **Huynh V**, *D'Angelo A*, Wylie RG*. (2019) Degradable, low-fouling poly(carboxybetaine) hydrogels for 3D cell culture. *Biomedical Materials*. 14, 055003.

20. **Shoaib MM, Huynh V**, *Shad Y*, Wylie RG*. (2019) Controlled hydrolysis of non-fouling hydrogels for applications in tissue engineering. *RSC Advances*. 9, 18978-18988.

19. Chen S, Auriat AM, Li T, Stumpf TR, Wylie RG, Chen X, Willerth SM, DeRosa M, Tarizian M, Cao X, Tsai EC*. (2019) Advancements in Canadian biomaterials in neurotraumatic diagnosis and therapies. *Processes*. 7, 336.

18. Ahmed R, Akcan M, Khondker A, Rheinstädter MC, Bozelli Jr. JC, Epand RM, **Huynh V**, Wylie RG, Boulton S, Huang J, Verschoor CP, Melacini G*. (2019) Atomic resolution map of the soluble amyloid beta assembly toxic surfaces. *Chemical Sciences*. 2019, 10, 6072-6082.

17. **Huynh V, Jesmer A, Shoaib M**, Wylie RG*. (2019) Influence of hydrophobic crosslinkers on carboxybetaine copolymer stimuli response and hydrogel biological properties. *Langmuir*, *35* (5), pp 1631–1641.

16. **Huynh V, Jesmer A, Shoaib MM,** *D'Angelo A*, Rullo AF, Wylie RG*. (2019) Improved efficacy of antibody cancer immunotherapeutics through local and sustained delivery. *ChemBioChem*, 20, 747-753.

15. Choudhuri K, de Silva UK, **Huynh V**, Wylie RG, Lapitsky Y*. (2018) Improved efficacy of antibody cancer immunotherapeutics through local and sustained delivery. *Journal of Materials Chemistry B*, 6, 7594-7604

14. McAlvin J, Wylie RG, Ramchander K, Nguyen M, Lok C, Moroi M, Shomorony A, Vasilyev N, Armstrong P, Yang J, Lieber A, Okonkwo S, Karnik R, Kohane D*. (2018) Antibody modified conduits for highly selective cytokine elimination from blood. *JCI Insight*, 3, e121133

13. *Lambert CR*[‡], **Nijsure D**[‡], **Huynh V**, Wylie RG*. (2018) Hydrogels with reversible chemical environments for in vitro cell culture. *Biomedical Materials*, 13, 045002.

12. **Huynh V**, Wylie RG*. (2018) Competitive Affinity Release for Long Term Delivery of Antibodies from Hydrogels. *Angwandte Chemie Int Ed,* 57, 3406-3410.

11. Lim DK[‡], Wylie RG[‡], Langer RS, Kohane DS*. (2015) Antiangiogenic Bioactive Polymer: Selective Binding Properties of C-6 OH Sulfated HA to VEGF165a. *Biomaterials*, 77, 130-138.

10. Wang W[‡], Liu Q[‡], Zhan C, Barhoumi A, Yang T, Wylie RG, Armstrong PA, Kohane DS*. (2015) Efficient Triplet–Triplet Annihilation-Based Upconversion for Nanoparticle Phototargeting. *Nano Letters*, 15, 6332-6338.

9. Lim DK., Barhoumi, A., Wylie, RG, Langer, RS, Kohane, DS*. (2013) Enhanced Photothermal Effect of Plasmonic Nanoparticles Coated with Reduced Graphene Oxide. *Nano Letters* 13, 4075-4079.

8. Wylie RG, Shoichet MS*. (2011) Three-dimensional spatial patterning of proteins in hydrogels. *Biomacromolecules*. 12, 3789-3796.

7. Wylie RG, Ashan S, Maxwell KL, Morshead CM, Shoichet MS*. (2011) Three-dimensional, spatially controlled simultaneous patterning of multiple growth factors in hydrogels. *Nature Materials,* 10, 799-806. (Cover; featured in news and views of *Nature Materials* Vol. 10 No.10, 2011)

6. Leipzig ND, Wylie RG, Kim H, Shoichet MS*. (2011) Differentiation of neural stem cells in three-dimensional growth factor-immobilized chitosan hydrogel scaffolds. *Biomaterials,* 32, 57-64.

5. Wang Y, Cooke MJ, Lapitsky Y, Wylie RG, Sahewsky N, Corbett D, Morshead CM, Shoichet MS*. (2011) Transport of epidermal growth factor in the stroke-injured brain. *Journal of Controlled Release,* 149, 225-235.

4. Aizawa Y, Wylie RG, Shoichet MS*. (2010) Endothelial Cell Guidance in 3D Patterned Scaffolds. *Advanced Materials,* 22, 4831-4835.

3. Rahman N, Purpura, KA, Wylie RG, Zandstra PW, Shoichet MS*. (2010) The use of vascular endothelial growth factor functionalized agarose to guide pluripotent stem cell aggregates toward blood progenitor cells. *Biomaterials,* 31, 8262-8270.

2. Taerum T, Lukoyanova O, Wylie RG, Perepichka, DF*. (2009) Synthesis, Polymerization, and Unusual Properties of New Star-Shaped Thiophene Oligomers. *Organic Letters,* 11, 3230-3233.

1. Wylie RG, Shoichet, MS*. (2008) Two-photon micropatterning of amines within an agarose hydrogel. *Journal of Materials Chemistry,* 18, 2716-2721.

ii) Contribution to books – Book Chapter

Lévesque, S.; Wylie, RG; Aizawa, Y.; Shoichet, M.S*. (2008) “Peptide Modification of Polysaccharide Scaffolds for Targeted Cell Signaling" in Handbook of Natural-based Polymers for Biomedical Applications, Ch. 9, pp. 260-87, edited by R.L. Reis, Woodhead Publishing Ltd, UK.

PATENTS, INVENTIONS AND COPYRIGHTS

Patents and Disclosures

bold indicates McMaster graduate student from my group

Jesmer A, Huynh V, Wylie RG. Disclosure, January 2020 “Graft-the-shrink: Increased “graft-to” polymer surface density via substrate shrinkage”

Huynh V, Wylie RG. Canadian Patent Application, June 2017 “Affinity based drug release system” (Filed) 2969564

Huynh V, Wylie RG. U.S Provisional Patent Application, June 2016 “Affinity based drug release system” (Filed) 15/615,429

Wylie RG, Kohane D.S. U.S. Provisional Patent Application, Oct 2015 “Sustained and reversible oral drug delivery systems” (Filed) PCT/US2015/056469

Wosnick J, Wylie RG, Shoichet MS. Canadian Provisional Patent Application, 2014 "Three-dimensional patterned hydrogels" (Granted)

McAlvin B, Wylie RG, Mizrahi B, Kohane DS. U.S. Provisional Patent Application, March 2013 “Systems and methods for extracorporeal blood modification” (Filed) PCT/US2013/031744

Wosnick J, Wylie RG, Shoichet MS. U.S. Patent, 2008 "Three-dimensional patterned hydrogels" Patent Pub. No. 2008/028630 (Granted)

PRESENTATIONS

Presenter underlined, * indicates corresponding author.
Italics and **bold** indicate Wylie lab undergraduate and graduate students, respectively.

a. Invited

Wylie RG*. (March 2020) Biomaterials for Immune Modulation. University of Toronto, Toronto, Canada.

Wylie RG*. (Oct 2019) Local infusion of immunotherapeutics. Amgen. Toronto, ON.

Wylie RG*. (May 2019) Biomaterials to locally sustain immunotherapeutic release and modulate blood biochemistry. McMaster Immunology Research Centre. McMaster University. Hamilton, ON.

Wylie RG*. (Feb 2019) Materials to modulate immune responses by long term antibody delivery and blood filtration. University of Utah. Salt Lake City, Utah.

Wylie RG*. (Oct 2018). Local and long term delivery of protein therapeutics for the central nervous system. CHA University. Seoul, Korea.

Wylie RG*. (Sept 2018). Materials to modulate immune responses: long term antibody delivery and blood filtration. University of Toledo. Toledo, OH, USA.

Wylie RG*. (Dec 2015) Biomaterials to study and control cell-matrix interactions, and inhibit cytokines for anti-angiogenic and sepsis therapies. Xerox Research Centre of Canada Seminar. Mississauga, ON.

Wylie RG*. (Nov 2015) Spatial and temporal patterning of hydrogel chemical environments to study cell-matrix interactions. BIMR. McMaster University. Hamilton, ON.

Wylie RG*. (Dec, 2014) Development of biomaterials for the study of the cell-material interface and inhibition of cytokines. POLYMAC conference. McMaster University. Hamilton, ON.

Wylie RG*. (Jan, 2014) Design of biomaterials through biological interactions. McMaster University. Hamilton, ON.

Wylie RG*. (July, 2013) Three-dimensional chemical modification of hydrogels for tissue engineering. Dalhousie University. Halifax, NS.

Wylie RG*. (April, 2013) Three-dimensional chemical modification of hydrogels for tissue engineering. McGill University. Montreal, QC.

Wylie RG, Ahsan S, Maxwell K, Morshead C, Shoichet MS*. (June, 2011) Three-dimensional chemical modification of hydrogels for tissue engineering. TechConnect World. Boston, MA (International).

b. Contributed – Peer-Reviewed

Jesmer A, Wylie RG*. (2019) Graft-then-shrink: Low-fouling biosensors. PolyMac, McMaster, Hamilton, ON. (Poster)

Huynh V, Wylie RG* (2019) Displacement affinity release of antibodies for immunotherapies. PolyMac, McMaster, Hamilton, ON. (Poster)

Huynh V, Wylie RG* (2019) Displacement affinity release of antibodies for immunotherapies. ACS Publications Symposium – Innovation in material science and technology, Singapore (International). (Poster)

Huynh V, Wylie RG* (2019) Tunable displacement affinity release of antibodies towards cancer immunotherapies. NanoDDS, Cambridge, MA (International). (Poster)

Wylie RG*. (April 2019) Blood filtration: Materials to modulate systemic immune responses. ACS National Meeting. Orlando, FL (International). (Oral)

Huynh V, Wylie RG*. (April 2019) Long term delivery of antibodies from hydrogels for local cancer immunotherapy. ACS National Meeting. Orlando, FL (International). (Oral)

Wylie RG*. (Oct 2018) Long term delivery of antibodies from hydrogels for local cancer immunotherapy. 68th Canadian Chemical Engineering Conference. Toronto, ON (National). (Oral)

Jesmer A, Wylie RG*. (Oct 2018) Multimodal surface initiated RAFT polymerization of polyzwitterions for biosensing and bioseparation. 68th Canadian Chemical Engineering Conference. Toronto, ON (National). (Oral)

Huynh V, Wylie RG*. (August 2018) Competitive affinity release for long term delivery of antibodies from hydrogels. 256th ACS National Meeting. Boston, MA (International). (Oral)

Wylie RG*, **Huynh V.** (May 2018) Long term delivery of antibodies from hydrogels. 101st Canadian Chemistry Conference and Exhibition. Edmonton, AB (National). (Oral).

Wylie RG*, **Huynh V.** (May 2018) Competitive affinity release for long term delivery of antibodies from hydrogels. Canadian Biomaterials Society annual meeting. Victoria, BC (National). (Oral).

Wylie RG*, **Huynh V, Nijsure D**, *Lambert CR*. (May 2017) Biomaterials inspired from biomacromolecular interactions for applications in cell culture, retinal drug delivery and septic blood filtration. 100th Canadian Chemistry Conference. Toronto, ON (National). (Oral)

Huynh V, Asohan J, Shoaib MM, Wylie RG*. (May 2017) A two-step affinity drug delivery system for long term delivery of therapeutic proteins from hydrogels. 100th Canadian Chemistry Conference. Toronto, ON (National). (Oral)

Nijsure D, Wylie RG*. Porous agarose hydrogels with dynamic chemical environment for in vitro cell culture. 100th Canadian Chemistry Conference. Toronto, ON (National). (Poster)

Huynh V, Wylie RG*. (Dec 2016) An Injectable and degradable hydrogel for long term drug delivery to the posterior segment of the eye. POLYMAC conference. McMaster University. Hamilton, ON. (Oral)

Wylie RG*, *Lambert CR*, **Huynh V**, **Nijsure D**. (June 2016) Biomaterials to study and control cell-matrix Interactions, and inhibit cytokines for anti-angiogenic therapies. 99th Canadian Chemistry Conference. Halifax, NS (National). (Oral)

Nijsure D, **Huynh V**, *Lambert C*, Wylie RG*. (June 2016) Temporal Patterning of Hydrogel Biochemical Environments to Mimic the Dynamic Extracellular Matrix. 99th Canadian Chemistry Conference. Halifax, NS (National). (Poster)

Huynh V, Wylie RG*. (June 2016) A two-step therapeutic release system for long term drug delivery. 99th Canadian Chemistry Conference. Halifax, NS (National). (Poster)

Wylie RG*, *Lambert C*, **Huynh V**, **Nijsure D**. (May 2016) Controlling the biochemical environment of extracellular matrix mimics over time to study cell-matrix interactions for applications in regenerative medicine. World Biomaterials Conference 2016. Montreal, QC (International). (Poster)

Lambert CR, Wylie RG*. (Dec, 2015) Spatial and temporal patterning of hydrogel chemical environments to study cell-matrix interactions. POLYMAC conference. McMaster University. Hamilton, ON. (Poster)

Lambert CR, **Huynh V**, Wylie RG*. (Oct, 2015) Temporal patterning of hydrogel chemical environments to study cell-matrix interactions. 65th Canadian Chemical Engineering Conference. Calgary, AB (National). (Oral).

Lambert CR, Wylie RG*. (May, 2015) Temporal patterning of hydrogel biochemical environments to study cell-matrix interactions. Canadian Biomaterials Society annual meeting. Toronto, ON (National). (Oral).

Wylie RG, Ahsan S, Maxwell K, Morshead C, Shoichet MS*. (March, 2010) Tissue engineered 3D patterned hydrogels. ACS National Meeting. San Francisco, CA (International). (Oral).

Wylie RG, Wosnick JH, Ashan S, Morshead C, Shoichet MS*. (Dec, 2008) Femtosecond light patterned hydrogels for tissue engineering. TERMIS-NA. San Diego, CA (International). (Oral).

Wylie RG, Wosnick JH, Maxwell K, Shoichet MS*. (Nov, 2008) Photo-patterning of matrices to spatially control cellular activity. Stem cell network AGM. Vancouver, BC. (Poster)

Wylie RG, Wosnick J, Ashan S, Morshead C, Shoichet MS*. (May, 2008) Femtosecond light patterned hydrogels for the guidance of retinal progenitor cells. Vision Science Research Day. Toronto, ON. (Poster).

Ahsan S, Wylie RG, Shoichet MS, Morshead C*. (Dec, 2008) Creating retinal tissue in 3D with defined factors using adult retinal stem cells. TERMIS-NA. San Diego, CA. (Poster).

Wylie RG, Wosnick J, Shoichet MS*. (Nov, 2007) Femtosecond light patterned hydrogels for tissue engineering with stem cells. Stem cell network AGM. Toronto, ON. (Poster).

Wylie RG, Wosnick J, Morshead C, Shoichet MS*. (April, 2007) Femtosecond light patterned hydrogels for tissue engineering. Ontario Centre of Excellence Discovery. Toronto, ON. (Poster).

Taerum TA, Wylie RG, Perepichka DF*. (August, 2007) Synthesis of building blocks for 2-D conjugated polymers. ACS national meeting. Boston, MA. (Poster).

Wylie RG, Shoichet MS*. (Nov. 2006) Femtosecond laser patterning of hydrogels for tissue engineering. 34th Québec-Ontario Physical Organic Mini-Symposium. Montréal, QC (Regional). (Oral).

Wylie RG, Wosnick J, Miller RJD, Morshead C, Shoichet MS*. (April, 2006) Femtosecond light pattern neural networks: New concepts for regenerative medicine. Ontario Centre of Excellence Discovery. Toronto, ON. (Poster).

EXTERNAL PROFESSIONAL ACTIVITIES

a. Executive positions

- Secretary of the Executive Committee of the Chemical Institute of Canada (CIC) Hamilton Section (Sept 2016 to present)

- Help organize local events to promote chemical sciences in the Hamilton region through workshops, science fairs, lectures and social activities.
- Advisor for the 1st and 2nd CIC Conference and Mixer (2017-2018) to promote interactions between local chemical scientists. The events are being used as a model for future activities by the national office.
- Organizer and abstract reviewer for Monsaroff, an undergrad student presentation competition (2016-2018)

- Member-at-Large of the Executive Committee of the CIC Hamilton Section (2014 to 2016)

b. Journal referee (24 different journals)

Advanced Materials, Advanced Healthcare Materials, ACS Applied Materials and Interfaces, ACS Applied Polymer Materials, ACS Chemical Neuroscience, Acta Biomaterialia, Biofabrication, Biomacromolecules, Biomedical Materials, Cells Tissues Organs, European Journal of Pharmaceutics and Biopharmaceutics, Gels, Journal of Biomaterials Applications, Journal of Biomedical Materials Research Part A, Journal of Immunological Methods, Journal of Materials Chemistry B, Journal of Micromechanics and Microengineering, Journal of Neural Engineering, Journal of the Royal Society Interface, Langmuir, Nano Letters, Nano Research, PLOS Computational Biology, Science Advances.

c. External grant review panel

- Prostate Cancer Canada: Movember Discovery Grant Competition, Panel C experimental therapeutics (2017).

d. Conference activities

- Co-organizer of Southern Ontario Undergraduate Student Chemistry Conference (2021)
- Co-organizer of the Spring 2019 ACS Biomaterials and Biointerfaces symposium
- Poster Judge at Canadian Biomaterial Society Meetings (2015, 2018)
- Poster Judge at 65th Canadian Chemical Engineering Conference (2015)
- Poster Judge at 56th Annual BASEF middle and high school science fair at Mohawk College (2016-2018)

INTERNAL PROFESSIONAL ACTIVITIES

a. Executive positions

- Organizer for departmental seminars, external speakers (2015 to present)
- Organizer for 4G12 (2020-2021)
- Co-organizer of Chemistry Graduate Colloquium (2017-2018)
- Representative on McMaster University's Faculty Association council (2016 to present)
- Advisor to McMaster Undergraduate Society for the Chemical Sciences (MUSCS; 2014 to present). *In 2016, MUSCS received in honorable mention from the Canadian Society for Chemistry for the CSC student Chapter Merit Award.*

b. Committees

- Department Seminars (2015 to present)
- Chemical Biology Graduate Program Advisor Committee (2019 to present)
- Molecular Medicine Hiring Committee (2019-2020)
- Internal McMaster CFI review panel member (2019)
- Faculty of Science NSERC PhD scholarship ranking committee (2016-2019)
- Chemical Biology Curriculum committee (2017-2018)
- Departmental Recruiting, Inreach, and Outreach Committee (2014-2018)
- Chair selection committee for the Department of Chemistry and Chemical Biology (2017)

- Website and Social Media Committee for Department of Chemistry and Chemical Biology (2015-2017)
- Graduate Curriculum Committee (2017)
- Graduate Scholarship Committee – Mackenzie King Memorial Scholarship (2016)

c. Outreach activities

- Participated at May@Mac information sessions to recruit potential undergraduate students (2016-2018)
- Participated at Faculty of Science information sessions to recruit second year undergraduate students (2016-2018)

d. Mental health and wellness initiatives

- Co-director of Mentorship Circle Committee (2016 to present)
  - McMaster funded program to mentor second year Chemistry and Chemical Biology undergraduate students. Co-Awarded the Leadership in Teaching and Learning Fellowship, MacPherson Institute, $15,000.
- Organized and participated at undergraduate mental wellness nights (2016-2017)

SUPERVISORSHIPS

a. Doctoral

Mandeep Marway Sept 2020 to present
McMaster University – Biomedical Engineering
Project title: In vitro perfusion models for screening cancer immunotherapeutics

Alexander Jesmer May 2017 to present
McMaster University – Chemical Biology
Project title: Graft-then-shrink: Increased low-fouling polymer surface density via substrate shrinking.

Vincent Huynh May 2015 to present
McMaster University – Chemical Biology
Project title: Immuno-engineering the brain through local and sustained release of Bi-specific T cell Engagers (BiTEs) for the treatment of glioblastoma
Awarded the NSERC PGS PhD national scholarship (2018)
Awarded McMaster's Chemical Biology Impact Award (2018)

Mandeep

b. Master

Anthony D'Angelo
McMaster University – Chemical Biology Sept 2020 to present
Project: Controlled delivery of immunotherapeutics for glioblastoma

Simran Chathanat
McMaster University – Biomedical Engineering Sept 2020 to present
Project: Anti-viral and bacterial polymeric surfaces
Co-supervisor" Dr. Todd Hoare

Jiawei Zhang August 2019 to present
McMaster University – Chemistry

Project Title: Non-immunogenic hydrogels for controlled protein release

April Marple May 2019 to present
McMaster University – Chemistry
Project Title: Multivalent T cell Engagers (MuTEs) for selective targeting of prostate cancer

Muhammad Muneeb Shoaib May 2017 to Aug 2019
McMaster University – Chemistry
Project title: Short- and long-term degradation of low-fouling poly(oligo(ethylene glycol) methyl ether methacrylate) hydrogels

Devang Nijsure Sept 2015 to Dec 2017
McMaster University – Chemical Biology
Project title: Dynamic biochemical environments within hydrogels to study cell-ECM interactions
Present position: Scientific advisor at Klick Health

c. Undergraduate

Kevin Wai Sept 2020 to April 2021
Undergraduate thesis student – CHEMBIO 4GG12
Title: Anti-viral protein-polymer conjugate for SARS-CoV-2

Siming Wang Sept 2020 to April 2021
Undergraduate thesis student – CHEMBIO 4GG12
Title: Heparan sulfate/Chitosan microparticles for controlled release of SARS-CoV-2 neutralizing antibodies

Nicole Wong Sept 2020 to April 2021
Undergraduate thesis student – CHEMBIO 4GG12
Title: PLGA microparticles for controlled release of SARS-CoV-2 neutralizing antibodies

Kyle Faiczak Sept 2019 to April 2020
Undergraduate thesis student – CHEMBIO 4GG9
Title: Shrinking silicone substrate towards improved implant biointerfaces

Mark Kit Sept 2019 to April 2020
Undergraduate thesis student – CHEMBIO 4GG9
Title: Polymer controlled protein affinity release from hydrogels

Marieke Groot Sept 2019 to April 2020
Undergraduate thesis student – CHEMBIO 4GG9
Title: Optimizing substrate shrinking for low-fouling surfaces

Natalie Ifraimov May 2019 to Aug 2019
McMaster University – Chemical Engineering co-op student
Project title: Phase separating antibody-polymer conjugates for local drug delivery
Present position: Undergraduate student in Chemical Engineering

Yousuf Shad Sept 2018 to April 2019
Undergraduate thesis student – CHEMBIO 4GG9
Title: Controlled hydrolysis of low-fouling hydrogels
Present position: Undergraduate student in Chemical Biology

Jaimy Wu Sept 2018 to April 2019

Undergraduate thesis student – CHEMBIO 4GG9
Title: Improved mechanical properties of carboxybetaine hydrogels
Present position: Nursing at University of Toronto

Spencer Taylor Sept 2018 to April 2019
Undergraduate thesis student – CHEMBIO 4GG9
Title: In vitro model for intracranial antibody delivery from hydrogels
Present position: Undergraduate student in Chemical Biology

Anthony D'Angelo May 2018 to August 2018
Undergraduate USRA co-op student
Title: Injectable carboxybetaine hydrogels for cell delivery
Present position: Undergraduate student in Chemical Biology

Alex Wang January 2018 to August 2018
Undergraduate Co-op student
Title: Super-selective polymers for cell binding
Present position: Undergraduate student in Chemical Biology

Timothy Cheung Sept 2017 to April 2018
Undergraduate thesis student – CHEMBIO 4GG9
Title: Carboxybetaine copolymers for selective cancer cell targeting
Present position: Graduate student - University of Toronto Chemistry

Marc Mariella Sept 2017 to April 2018
Undergraduate thesis student – CHEMBIO 4GG9
Title: Controlled dissolution of biotins for antibody competitive affinity release
Present position: Dentistry School at Nova Southeastern University

Logan Zettle Sept 2017 to April 2018
Undergraduate thesis student – CHEMBIO 4GG9
Title: Bioactive carboxybetaine surfaces
Present position: Graduate student at University of Toronto Chemistry

Benjamin Lake Sept 2016 to April 2017
Undergraduate thesis student – CHEMBIO 4GG9
Title: Microfluidic devices to screen cell invasion as a function of extracellular matrix composition
Awarded 3rd place for undergraduate thesis presentation
Present position: Graduate student - McMaster Chemical Biology

Jathavan Asohan Sept 2016 to April 2017
Undergraduate thesis student – CHEMBIO 4GG9
Title: Streptavidin modified hydrogels for long term delivery
Present position: Graduate student – McGill Chemistry

Matthew Campea Sept 2016 to April 2017
Undergraduate thesis student – CHEMBIO 4GG9
Title: Polymeric coatings for bioactive surfaces
Present position: Graduate student - McMaster Chemical Engineering

Yao Lin Sept 2016 to April 2017
Undergraduate thesis student – CHEMBIO 4GG9
Title: Expression of low-immunogenic streptavidin analogues
Present position: Scientist at Estee Lauder

Muhammad Muneeb Shoaib April 2016 to Dec 2016
Co-op student
Title: Synthesis of sparingly soluble biotin derivatives for protein release applications
Present position: Graduate student - McMaster Chemistry

Catherine Lambert Sept 2015 to April 2016
Undergraduate thesis student – CHEMBIO 4GG9
Title: Temporal control of hydrogel biochemical environments for in vitro cellular scaffolds
Awarded 1st place for undergraduate thesis presentation
Present position: Scientist at Evonik

Muhammad Muneeb Shoaib Sept 2015 to April 2016
Undergraduate thesis student – CHEMBIO 4GG9
Title: Controlled degradation of injectable, low-fouling hydrogels
Present position: Graduate student - McMaster Chemistry

Ting Zhang Sept 2015 to April 2016
Undergraduate thesis student – BIOCHEM 3R06
Title: Temporal immobilization of bioactive peptides in agarose hydrogels
Present position: Research Assistant

Yao Lin May 2015 to August 2015
Summer research assistant
Title: Degradable hydrogels of intracranial drug delivery
Present position: Scientist at Estee Lauder

Catherine Lambert Jan 2015 to August 2015
CHEMBIO co-op student
Title: Temporally-controlled reversible modification of hydrogel biochemical environments to mimic the dynamic extracellular matrix
Present position: Scientist at Evonik

Aaron Manalo Sept 2014 to April 2015
Undergraduate thesis student – CHEMBIO 4GG9
Title: Chemical modification of hydrogels for tunable extracellular matrix mimics
Present position: Pharmacy Assistant at MediSystem Pharmacy

Nickolas Goncharenko Jan 2015 to April 2015
Undergraduate research student – ISCI 3A12
Title: Developing hydrogels as scaffolds for reversible biomolecule immobilization
Present position: MSc student in Applied Mathematics

Laura Riano Merchan Jan 2015 to April 2015
Undergraduate research student – CHEMBIO 3RP3
Title: Synthesis and characterization of agarose-desthiobiotin hydrogels for use as extracellular matrix mimics
Present Position: Research Assistant

<u>d. Student Supervisory Committees</u>

Evan Burns January 2020 to present
Committee member – Chemistry
Supervisor: Alex Adronov

Wan-Chi Chang November 2019 to present
Committee member – Biomedical Engineering
Supervisor: Heather Sheardown

Feng Zhang November 2019 to present
Committee member – Biomedical Engineering
Supervisor: Boyang Zhang

Derrick Hastings May 2019 to present
Committee member – Chemistry
Supervisor: Harald Stover

Mengchen Liao Dec 2018 to present
Committee member – Chemistry
Supervisor: Michael Brook

Xiong Zhang Feb 2018 to present
Committee member – Biochemistry and Biomedical Sciences
Supervisor: Jake Magolan

Ben Lake Sept 2018 to present
Committee member – Chemical Biology
Supervisor: Anthony Rullo

Eva Mueller Dec 2018 to present
Committee member – Chemical Engineering
Supervisor: Todd Hoare

Eva Mueller July 2018
MSc Defense – Chemical Engineering
Supervisor: Todd Hoare

Kelli Johnson Sept 2018
MSc Defense – Chemical Engineering
Supervisor: Todd Hoare

Nicola Muzzin Dec 2018
MASc Defense – Chemical Engineering
Supervisor: Todd Hoare

Yi Wang Oct 2018
PhD Defense – Australian National University
Supervisor: Dr. David Nisbet

Carla Brown Aug 2017
PhD Defense – Chemical Biology
Supervisor: Dr. Jim McNulty

Kiara Bruggeman Dec 2016
PhD defense – Australian National University
Supervisor: David Nisbet

David Hurem Nov 2016 to present
Committee Member – Chemistry

MSc Student
Supervisor: Jim McNulty

Arkesh Narayanappa Oct 2016
MSc Defense - Chemistry
Supervisor: Jim McNulty

Helen Dorrington Aug 2016
MASc Defense – Chemical Engineering
Supervisor: Todd Hoare

Ivan Urosev May 2016
MASc Defense – Chemical Engineering
Supervisor: Todd Hoare

Samantha Slikboer Sept 2015 to Aug 2019
Committee Member – Chemistry
PhD student
Supervisor: Dr. John Valliant

Yuqing Zhao July 2015
MSc Defense – Chemistry
Supervisor: Dr. Harald Stover

Said Rahimi Feb 2015
MSc Defense – Chemistry
Supervisor: Dr. Jose Moran-Mirabal