

# Phillip Karpowicz

## 1. Address

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## 2. Employment

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**University of Windsor**, Windsor, ON, Canada 2014 – Present

- Associate Professor, Department of Biomedical Sciences
- Cross-appointed, Department of Integrative Biology
- Chair, Biological Sciences Graduate Program (2017-2020)
- Coordinator, Biological Sciences B.Sc. Honours Program (2015-16)

**Harvard Medical School**, Boston, MA, USA 2008 – 2014

- Postdoctoral Fellow (supervised by Dr. Norbert Perrimon)
- Intestinal stem cell biology and organoid culture (mouse and *Drosophila* systems)

## 3. Education

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**University of Toronto**, Toronto, ON, Canada 2003 - 2008

- Ph.D., Medical Science (supervised by Dr. Derek van der Kooy)
- Adult neural stem cells and division symmetry (Mouse)

**University of Toronto**, Toronto, ON, Canada 2001 - 2003

- M.Sc., Medical Science, with Collaboration in Bioethics
- Human/Nonhuman chimeras in stem cell research

**Mount Allison University**, Sackville, NB, Canada 1996 - 2000

- B.Sc. Honors, 1<sup>st</sup> Class Biochemistry (supervised by Prof. Jack Stewart)

## 4. Research funding history

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- Canadian Institutes of Health Research Project Grant (2022-2027)

- Natural Sciences and Engineering Research Council of Canada Discovery Grant (2020-2025); Discovery Accelerator Supplement (2020-23).
- Canadian Institutes of Health Research Project Grant (2018-2023)
- Genome Canada Large-Scale Applied Research Project, co-PI (2019-2023)
- Ontario Early Researcher Award (2018-2023)
- Canada Foundation for Innovation (John Evans Leadership Fund) / Ontario Research Fund (2015; 2017; 2020)
- Natural Sciences and Engineering Research Council of Canada Discovery Grant (2015-2020)
- Ontario Institute for Regenerative Medicine New Ideas Grant (2018-19)
- Crohn's and Colitis Foundation of Canada Innovations Grant (2018-19)
- Natural Sciences and Engineering Research Council of Canada Engage Grants (2018-2019)
- Windsor Essex Cancer Centre Foundation Seeds4Hope Grant (2015-2017)
- Mitacs/JSPS and SWORP Student Training Grants (2016, 2017)
- Harvard Stem Cell Institute Cancer Pilot Grant (2011-2013)
- Human Frontier in Science Long Term Fellowship (2009-2012)

## 5. Awards

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- Ontario Early Researcher Award (2018-2023)
- Canadian Society for Chronobiology Junior Investigator Award (2019)
- University of Windsor Outstanding Faculty Research Award (2019)
- Departmental Nomination for Governor General's Gold Medal (2009)
- Vision Science Research Program OSOTF Scholarship (2006-2008)
- NSERC Postgraduate Scholarship (Ph.D. Program) (2004-2006)
- NSERC Postgraduate Scholarship (MSc. Program) (2002-2003)
- University of Toronto, Open Fellowship (2001, 2003)
- Stem Cell Network Trainee Award (2001-2002)

## 6. Professional activities

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### 6.1 Editorial and peer-review activities

- **Editorial board member:** Frontiers in Cell and Developmental Biology (2020-present)
- **Peer-reviewer for scientific journals (2010-present):**
  - *Gastroenterology*
  - *Nature Communications*
  - *Science Advances*

- *Cell Reports*
  - *Stem Cells*
  - *EMBO Reports*
  - *Developmental Biology*
  - *Oncogene*
  - *Nature Scientific Reports*
  - *Journal of Biological Rhythms*
  - *Gastroenterology Reports*
  - *JoVE*
  - *Cell Physiology and Biochemistry*
  - *Cell Research*
  - *Cell Cycle*
  - *PLoS Genetics*
  - *PLoS ONE*
  - *British Journal of Pharmacology*
  - *Theranostics*
  - *Translational Research*
  - *Life Sciences*
  - *G3, Genome*
  - *Methods*
- **Peer-reviewer for funding agencies (2017-present):**
    - NSERC Discovery Grant program evaluation group member (1501: Genes, Cells, and Molecules, 2020-present); Alt-chair (2021-present)
    - NRFR Exploration Grants (2020-present)
    - CIHR Graduate Scholarships (2017-2020)
    - Canada Foundation for Innovation (2019-present)
    - Wellcome Trust Grants, UK (2019)
    - Human Frontier Science Program Research Grants, International (2018)
    - Medicine by Design Fellowship Awards (2017-2020)

## **6.2 Society memberships**

- *Canadian Society for Chronobiology* (2015-present; Executive Board Member (2021-present))
- *International Society for Stem Cell Research* (2003-present)
- *Canadian Association for Gastroenterology* (2020-present)
- *Crohn's and Colitis Canada IBD Research Institute* (2014-present)
- *Canadian Sleep and Circadian Network* (2015-present)
- *Ontario Institute for Regenerative Medicine* (2014-2019)
- *Windsor Cancer Research Group* (2014-present)
- *Halifax Project – Broad-Spectrum Integrative Design for Cancer Prevention and Therapy* (2012-2015)
- *CHIMBRIDS (Chimeras and Hybrids in Comparative European and International*

### 6.3 Professional service activities

- Canadian Society for Chronobiology Board Member (2021-2023)
- Co-Host / Organizer for Canadian Association of Gastroenterology: Digestive Diseases Week Conference (Feb, 2021)
- Organizing committee Canadian Society for Chronobiology Conference (2019); Conference of the Canadian Society of Zoologists (2019)
- Conference poster judge (Canadian Developmental Biology Meeting 2021; Canadian Society for Chronobiology, 2017; Windsor Cancer Research Group, 2016/2020; Till and McCulloch Meeting, 2015)

## 7. Research activities

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### 7.1 Publications >2500 citations, H-index 17 (Google Scholar)

(\* indicates student under my supervision)

1. Taleb Z. \*, Carmona-Alcocer V. \*, Stokes K. \*, Haireek M. \*, Wang H., Collins S., Khan W.I., Karpowicz P. *Bmal1 regulates the daily timing of colitis.* **Frontiers in Cellular and Infection Microbiology** 12: 773413 (2022).
2. Stokes K. \*, Nunes M. \*, Trombley C. \*, Flores D. E. F. L., Wu G., Curran C. \*, Taleb Z. \*, Alkhateeb A., Banskota S., Harris C., Love O., Khan W.I., Rueda L., Hogenesch J.B., Karpowicz P. *The circadian clock gene, Bmal1, regulates intestinal stem cell signaling and represses tumor initiation.* **Cellular & Molecular Gastroenterology and Hepatology** 12(5): 1847-1872 (2021).
3. Parasram K. \*, Bachetti D. \*, Carmona-Alcocer V. \*, Karpowicz P. *Fluorescent reporters for studying circadian rhythms in Drosophila melanogaster.* **Methods in Molecular Biology** (in press, 2021).
4. Parasram K. \*, Karpowicz P. Time after time: Circadian clock regulation of intestinal stem cells. **Cellular and Molecular Life Sciences** 77(7): 1267-1288 (2020). (Invited Review)
5. Rahman F., Angus S., Stokes K. \*, Karpowicz P., Krause M. *Impaired ECM Remodeling and Macrophage Activity Define Necrosis and Regeneration Following Damage in Aged Skeletal Muscle.* **International Journal of Molecular Sciences** 21(13): 4575 (2020).
6. Parasram K. \*, Bernardon N. \*, Li H., Hammoud M. \*, Chang H. \*, Perrimon N., Karpowicz P. *Intestinal stem cells exhibit conditional circadian clock function.* **Stem Cell Reports** 11(5): 1287-1301 (2018). (Journal Cover Image)

7. Thraya M. \*, Hammoud M. \*, Heath D., Karpowicz P. *Testing the expression of circadian clock genes in the tissues of Chinook salmon, *Oncorhynchus tshawytscha**. **Chronobiology International** 36(8): 1088-1102 (2019).
8. Stokes K. \*, Cooke A. \*, Chang H. \*, Weaver D.R., Breault D.T., Karpowicz P. *The circadian clock gene *BMAL1* coordinates intestinal regeneration*. **Cellular & Molecular Gastroenterology and Hepatology** 4(1): 95-114 (2017). (>30 citations, Web of Science)
9. Amin R., Karpowicz P., Carey T.E., Arbiser J., Nahta R., Chen Z.G., Dong J-T., Kucuk O., Khan G.N., Huang G.S., Lee H-Y., Reichrath J., Honoki K., Georgakilas A.G., Amedei A., Amin A., Helferich B., Boosani C.S., Ciriolo M.R., Chen S., Mohammed S.I., Azmi A.S., Keith W.N., Bhakta D., Halicka D., Niccolai E., Fujii H., Aquilano K., Ashraf S.S., Nowsheen S., Yang X., Bilslan A, Shin D.M. *Evasion of anti-growth signaling: a key step in tumorigenesis and potential target for treatment and prophylaxis by natural compounds*. **Seminars in Cancer Biology** 35: S55-77 (2015).
10. Block K.I., *et al.* *Designing a broad-spectrum integrative approach for cancer prevention and treatment*. **Seminars in Cancer Biology** 35: S276-304 (2015). (>180 citations, Web of Science)
11. Karpowicz P., Zhang Y., Hogenesch J.B., Emery P., Perrimon N. *The circadian clock gates the intestinal stem cell regenerative state*. **Cell Reports** 3(4): 996-1004 (2013). (>70 citations, Web of Science)
12. DeVeale B., Bausch-Fluck D., Seaberg R., Runciman S., Akbarian V., Karpowicz P., Yoon C., Song H., Zandstra P., Wollscheid B., van der Kooy D. *Surfaceome profiling reveals regulators of neural stem cell function*. **Stem Cells** 32(1): 258-68 (2014).
13. Smukler S.R., Arntfield M.E., Razavi R., Bikopoulos G., Karpowicz P., Seaberg R., Dai F., Lee S., Ahrens R., Fraser P., Wheeler M., van der Kooy D. *The Adult Mouse and Human Pancreas Contain Rare Multipotent Stem Cells that Express Insulin*. **Cell Stem Cell**. 8(3): 281-93. (2011). (>150 citations, Web of Science)
14. Ni J.Q., Zhou R., Czech B., Liu L., Holderbaum L., Yang-Zhou D., Shim H.S., Tao R., Handler D., Karpowicz P., Binari R., Booker M., Brennecke J., Perkins L.A., Hannon G.J., Perrimon N. *A Genome-Scale shRNA Resource for Transgenic RNAi in *Drosophila**. **Nature Methods**. 8(5): 405-7. (2011). (>480 citations, Web of Science)
15. Karpowicz P., Perez J. \*, Perrimon N. *The Hippo Tumor Suppressor Pathway Regulates Intestinal Stem Cell Regeneration*. **Development** 137(24): 4135-45 (2010). (>220 citations, Web of Science)
16. Karpowicz P., Perrimon, N. *All for One and One for All: The Clonality of the Intestinal Stem Cell Niche*. **F1000 Biology Reports** 2:73 (2010).
17. Karpowicz P., *Biased DNA Segregation*. **Encyclopedia of Life Sciences**. John Wiley & Sons, Ltd: [DOI: 10.1002/9780470015902.a0022543] (2010).
18. Karpowicz P., *Response to Letter from Renata Maas*. **DNA Repair**. 9: 1024-25 (2010).

19. Karpowicz P., Willaime-Morawek S., Inoue T., Deveale B., Hitoshi S., van der Kooy D. *E-Cadherin Regulates Neural Stem Cell Self-Renewal*. **Journal of Neuroscience**. 29(12): 3885-96. (2009). (>70 citations, Web of Science)
20. Karpowicz P., Pellikka M., Godt D., Tepass U., van der Kooy D. *The germline stem cells of *Drosophila melanogaster* partition DNA non-randomly*. **European Journal of Cell Biology**. 88(7): 397-408. (2009).
21. Coles-Takabe B.L., Brain I., Purpura K.A., Karpowicz P., Zandstra P.W., Morshead C.M., van der Kooy D. *Don't Look: Growing clonal versus non-clonal neural stem cell colonies*. **Stem Cells**. 26(11): 2938-44. (2008). (>100 citations, Web of Science)
22. Karpowicz P., Inoue T., Runciman S., Chaddah R., Seaberg R., Gertsenstein M., Byers L., Yamanaka Y., Tondat S., Slevin J., Hitoshi S., Rossant J., van der Kooy D. *Adhesion Is Prerequisite But, Alone, Is Insufficient for Neural Stem Cell Pluripotency*. **Journal of Neuroscience**. 27(20): 5437-47. (2007).
23. Karpowicz P., Morshead C., Kam A., Jervis E., Cheng V., van der Kooy D. *Support for the Immortal Strand Hypothesis: Neural Stem Cells Partition DNA Asymmetrically in vitro*. **Journal of Cell Biology**. 170(5): 721-32. (2005). (>150 citations, Web of Science)
24. Karpowicz P., Cohen C., van der Kooy D. *Developing Human/Nonhuman Chimeras in Human Stem Cell Research: Ethical Issues and Boundaries*. **Kennedy Institute of Ethics Journal**. 15(2): 107-34. (2005). (>50 citations, Web of Science)
25. Karpowicz P., Cohen C., van der Kooy D. *It is Ethical To Transplant Human Stem Cells into Nonhuman Embryos*. **Nature Medicine**. 10(3): 331-5. (2004). (>50 citations, Web of Science)
26. Stewart J.M., Blakely J.A., Karpowicz P., Martin B.M., Thatcher B. *Unusually weak oxygen binding, physical properties, partial sequence, autoxidation rate and a potential phosphorylation site of beluga whale (*Delphinapterus leucas*) myoglobin*. **Comp Biochem Physiol B Biochem Mol Biol**. 137(3): 401-12. (2004).
27. Karpowicz P. *In Defense of Stem Cell Chimeras: A Response to 'Crossing Species Boundaries'*. **American Journal of Bioethics**. 3(3): w17-19. (2003).

## 7.2 Invited lectures

1. Centre d'études avancées en médecine du sommeil , Montréal (virtual seminar), Canada. "*Clock controlled rhythms in regeneration are critical in resolving colitis.*" Feb 21, 2022.
2. Canadian Society for Chronobiology Meeting (virtual conference), Canada. "*Circadian Rhythms in Intestinal Health and Disease.*" Nov 3, 2021.
3. International Society for Stem Cell Research, Boston (virtual), USA. "*The circadian clock gene, Bmal1, suppresses tumourigenesis by regulating intestinal stem cell signaling.*" June 26, 2020.

4. Windsor-Essex County COVID19 Webinar to address vaccine hesitancy, Windsor (virtual), Canada. Mar, 2021
5. Crohn's and Colitis Canada – Gutsy Chat for Donors, Toronto (virtual), Canada. "A matter of timing: Circadian rhythms and inflammatory bowel disease." June 2, 2020.
6. Canadian Association of Gastroenterology: Digestive Diseases Week, Montreal, Canada. "A matter of timing: Testing the role of the circadian clock gene *BMAL1* during inflammation." Mar 1, 2020.
7. Chronic Inflammation, Immunity, and Cancer Meeting, Orford, Canada. "Circadian rhythms in the intestinal epithelium." Oct 4, 2019.
8. Canadian Society for Chronobiology Meeting, Montreal, Canada. "The Use of Model Organisms and Various Genetic Approaches in Biological Rhythms Research." May 26, 2019.
9. Ontario Institute of Regenerative Medicine, Toronto, Canada. "Circadian rhythms in organoid culture: regulation of stem cells by the circadian clock." May 15, 2019.
10. University of Cincinnati College of Medicine, Cincinnati, USA. "Circadian rhythms in the intestinal epithelium regulate inflammation." Mar 5, 2019.
11. Wayne State University, Detroit, USA. "Circadian rhythms in regeneration." Jun, 2018.
12. Farncombe Institute, McMaster University, Hamilton, Canada. "Circadian control of intestinal physiology and health." Nov, 2017.
13. Canadian Developmental Biology Meeting, Banff, Canada. "The circadian clock regulates a conserved regeneration program." Mar, 2016.
14. Wayne State University, Detroit, USA. "Circadian rhythms in intestinal healing." Dec, 2015.
15. Gordon Research Conference: Chronobiology, Girona, Spain. "The Role of the Circadian Clock in Regeneration." Jun, 2015.
16. Harvard Digestive Diseases Center, Boston, USA. "The Timing of Intestinal Regeneration." Jan, 2014.
17. Harvard Medical School: HSCI Cancer Program, Boston, USA. "Intestinal Regeneration and Circadian Rhythms." Nov, 2013.
18. University of Massachusetts Medical School, Worcester, USA. "Intestinal Regeneration." Oct, 2013.
19. Atlantic Cancer Research Institute, Moncton, Canada. "Intestinal Regeneration, Cancer and Circadian Rhythms." Aug, 2012.
20. Till and McCulloch Meeting, Montreal, Canada. "Intestinal Regeneration is Gated by Circadian Rhythms." May, 2012.
21. Department of Genetics, Harvard Medical School, Boston, USA. "Intestinal Stem Cell Regeneration." Jul, 2011.

22. 2<sup>nd</sup> Annual Hippo Workshop, Rome, Italy. "*The Hippo Tumor Suppressor Pathway Requires Jak/STAT Activity to Regulate Tissue Stem Cell Regeneration.*" Nov, 2010.
23. Mount Allison University, Sackville, Canada. "*Adhesion Proteins Regulate Stem Cell Activity.*" Feb, 2010.
24. Dalhousie University, Halifax, Canada. "*Adhesion Proteins Regulate Stem Cell Activity.*" Feb, 2010.
25. St. Francis Xavier University, Antigonish, Canada. "*Adhesion Proteins Regulate Stem Cell Activity.*" Feb, 2010.
26. Abcam Stem Cell Research Conference, Cancun, Mexico. "*DNA Is Partitioned Asymmetrically in the Germline Stem Cells of Drosophila Melanogaster.*" Dec, 2006.
27. MaRS Centre, University of Toronto, Toronto, Canada. "*Technical Issues Pertaining to the Introduction of Cells into Ultrasound Guided Chimeras.*" Feb, 2006.
28. Developmental Biology Program, University of Toronto, Toronto, Canada. "*Support for the Immortal Strand Hypothesis: Asymmetric DNA Partitioning is Evidenced In Vitro.*" Sep, 2005.
29. Christopher Reeve Hot Topics in Stem Cell Biology, New Orleans, U.S.A. "*Neural Stem Cells Cosegregate Immortal Strand Bearing Chromosomes During Asymmetric Divisions.*" Nov, 2003.
30. Stem Cell Network Annual General Meeting, Vancouver, Canada. "*Neural Progenitors Exhibit Cosegregation of Chromosomes.*" Oct, 2003.
31. Stem Cell Network Annual General Meeting, Toronto, Canada. "*The Human/Macaque Retinal Stem Cell Chimera.*" Sep, 2002.

### **7.3 Presentations at conferences ( \* indicates student under my supervision)**

1. CanFly Drosophila Conference (virtual), Canada. "*The emergence of circadian rhythms during gut development.*" Parasram K \*, Zuccato A \*, Karpowicz P. Jun, 2021.
2. Canadian Society for Chronobiology (virtual), Canada. "*Colitis and the clock: circadian disruption impairs rhythms in epithelial regeneration.*" Taleb Z \*, Stokes K \*, Wang H, Collins S, Khan K, Karpowicz P. Jun, 2021.
3. Canadian Society for Chronobiology (virtual), Canada. "*The Intestinal Regenerative Response is Dependent on the Timing of Damage.*" Parasram K \*, Bachetti D \*, Hammoud M \*, Roye-Azar M, He L, Perrimon P, Karpowicz P. Jun, 2021
4. Canadian Society for Chronobiology (virtual), Canada. "*The circadian clock gene, Bmal1, regulates intestinal stem cell signaling and represses tumor initiation.*" Stokes K \*, Nunes M \*, Trombley C \*, Flôres D, Wu G, Hogenesch J, Karpowicz P. Jun, 2021



5. Canadian Developmental Biology Meeting (virtual), Canada. "*Circadian rhythms in the developing intestine of Drosophila melanogaster.*" Parasram K \*, Zuccato A \*, Karpowicz P. Apr, 2021.
6. Canadian Association of Gastroenterology: Digestive Diseases Week (virtual), Canada. "*The loss of the circadian clock gene Bmal1 increases tumour initiation in Apc-min mice.*" Stokes K \*, Nunes M \*, Trombley C \*, Flores DEFL, Wu G, Curran C \*, Taleb Z \*, Hogenesch JB, Karpowicz P. Mar, 2021 (travel award)
7. Canadian Association of Gastroenterology: Digestive Diseases Week (virtual), Canada. "*The circadian clock influences Jak/Stat signaling and gut permeability.*" Parasram K \*, Bachetti D \*, Karpowicz P. Mar, 2021.
8. Canadian Association of Gastroenterology: Digestive Diseases Week (virtual), Canada. "*The circadian timing of inflammatory bowel disease.*" Taleb Z \*, Stokes K \*, Wang H, Collins S, Khan W, Karpowicz P. Mar, 2021. (travel award)
9. 4th Biennial International WCRG Conference (virtual), Canada. "*The loss of the circadian clock gene Bmal1 increases tumour initiation in Apc-min mice.*" Stokes K \*, Nunes M \*, Trombley C \*, Flores DEFL, Wu G, Curran C \*, Taleb Z \*, Hogenesch JB, Karpowicz P. Nov, 2020.
10. International Society for Stem Cell Research (virtual), USA. "*Circadian regulation of regeneration in the intestine of Drosophila melanogaster.*" Parasram K \*, Bachetti D \*, Lei K \*, Karpowicz P. June, 2020.
11. International Society for Stem Cell Research (virtual), USA. "*Circadian transcriptional regulation in intestinal organoids of mice.*" Stokes K \*, Fores D, Wu G, Hogenesch J, Karpowicz P. June, 2020.
12. International Society for Stem Cell Research (virtual), USA. "*The clock gene Bmal1 affects regeneration of intestinal epithelial cells in mice with inflammatory bowel disease.*" Taleb Z \*, Stokes K \*, Wang H, Collins S, Khan W, Karpowicz P. June, 2020.
13. International Society for Stem Cell Research (virtual), USA. "*The effects of Bmal1 on mouse intestinal tumours.*" Curran C \*, Stokes K \*, Trombley C \*, Nunes M \*, Karpowicz P. June, 2020.
14. Canadian Society for Chronobiology, Montreal, Canada. "*Green Guts: Development of Circadian Rhythms in the Drosophila Intestine.*" Parasram K \*, Zuccato A \*, Karpowicz P. May, 2019. (1<sup>st</sup> place for best poster)
15. Canadian Society for Chronobiology, Montreal, Canada. "*A Dive into the Circadian Clock of Chinook Salmon.*" Thraya M \*, Hammoud M \*, Stephens A \*, Chang H \*, Heath D, Karpowicz P. May, 2019.

16. Canadian Society for Chronobiology, Montreal, Canada. "*The effect of BMAL1 on colorectal tumourigenesis.*" Trombley C \*, Nunes M \*, Stokes K \*, Curran C \*, Karpowicz P. May, 2019.
17. Canadian Society for Chronobiology, Montreal, Canada. "*Inflammatory bowel disease pathogenesis in the absence of the clock gene BMAL1.*" Taleb Z \*, Stokes K \*, Wang H, Khan W, Collins S, Karpowicz P. May, 2019.
18. Canadian Society for Chronobiology, Montreal, Canada. "*Testing Circadian Regulation of the JAK/STAT Signaling Pathway.*" Bachetti D \*, Parasram K \*, Hammoud M \*, He L, Perrimon N, Karpowicz P. May, 2019.
19. Canadian Society for Chronobiology, Montreal, Canada. "*Evaluating circadian rhythms in adenoma organoids.*" Stokes K \*, Narula N, Karpowicz P. May, 2019.
20. Canadian Society of Zoologists, Windsor, Canada. "*A Dive into the Circadian Clock of Chinook Salmon.*" Thraya M \*, Hammoud M \*, Stephens A \*, Chang H \*, Heath D, Karpowicz P. May, 2019.
21. Ontario Biology Day, London, Canada. "*The Effects of Bmal1 on Intestinal Tumour Characteristics.*" Curran C. \*, Stokes K. \*, Zhao T, Nunes M \*, Karpowicz P. Mar, 2019.
22. Ontario Biology Day, London, Canada. "*Studying the Impact of Photoperiod and Feeding Time on Circadian Rhythms in Chinook Salmon.*" Stephens A. \*, Thraya M. \*, Hammoud H. \*, Karpowicz P. Mar, 2019.
23. UWill Discover Undergraduate Conference, Windsor, Canada. "*A Dive into the Circadian Clock of Chinook Salmon.*" Thraya M. \*, Hammoud M. \*, Stephens A. \*, Chang H. \*, Heath D., Karpowicz P. Mar, 2019.
24. Society for Research of Biological Rhythms, Florida, USA. "*Single-cell analysis of circadian clock activity in the Drosophila intestine.*" Parasram K. \*, Bernardon N. \*, Hammoud M. \*, Chang H. \*, He L., Perrimon N., Karpowicz P. May, 2018. (travel award)
25. Society for Research of Biological Rhythms, Florida, USA. "*Testing circadian regulation of stem cell growth and Wnt signaling.*" Stokes K. \*, Nunes M. \*, Weaver D., Karpowicz P. May, 2018. (travel award)
26. UWill Discover Undergraduate Conference, Windsor, Canada. "*Investigating the effect of circadian rhythm regulator Bmal1 on tumorigenesis in APCmin/- mice.*" Zhou T. \*, Stokes K. \*, Nunes, M. \*, Curran C. \*, Karpowicz, P. Mar, 2018.
27. Gordon Research Conference: Chronobiology, Vermont, USA. "*Circadian regeneration in the intestinal epithelium.*" Stokes K. \*, Cooke A. \*, Chang H. \*, Weaver D.R., Breault D.T., Karpowicz P. Jul, 2017.

28. Canadian Society for Chronobiology, Toronto, Canada. "*BMAL1 and colorectal cancer progression.*" Nunes M. \*, Stokes K. \*, Cooke A. \*, DeBiasio C. \*, Karpowicz P. May, 2017. (travel award)
29. Canadian Society for Chronobiology, Toronto, Canada. "*Circadian interdependence in the Drosophila midgut.*" Bernardon N. \*, He L., Perrimon N., Karpowicz P. May, 2017. (travel award)
30. Canadian Society for Chronobiology, Toronto, Canada. "*Intestinal inflammation: a circadian regenerative response.*" Stokes K. \*, Cooke A. \*, Chang H. \*, Weaver D., Breault D., Karpowicz P. May, 2017. (travel award)
31. UWill Discover Undergraduate Conference, Windsor, Canada. "*Time will Tell: The Involvement of the Circadian Clock in Colorectal Cancer.*" Cooke A. \*, Nunes M. \*, Stokes K. \*, Karpowicz P. Mar, 2017 (2<sup>nd</sup> place winner).
32. UWill Discover Undergraduate Conference, Windsor, Canada. "*Clock work: the role of the circadian clock in colorectal cancer.*" DeBiasio C. \*, Nunes M. \*, Stokes K. \*, Karpowicz P. Mar, 2017 (3<sup>rd</sup> place winner).
33. 3rd Biennial International WCRG Conference, Windsor, Canada. "*The circadian clock gene BMAL1 coordinates intestinal regeneration.*" Stokes K. \*, Cooke A. \*, Chang H. \*, Weaver D., Breault D., Karpowicz P. Nov, 2016.
34. CIHR New Principal Investigators Meeting, Montreal, Canada. "*The Circadian Rhythms of Intestinal Regeneration.*" Stokes K. \*, Weaver D., Breault D., Karpowicz P. Oct, 2015.
35. Till and McCulloch Meeting, Toronto, Canada. "*A Time to Divide: Circadian Gated Proliferation.*" Stokes K. \*, Chang H. \*, Weaver D., Breault D., Karpowicz P. Oct, 2015. (travel award)
36. Gordon Research Conference: Chronobiology, Newport, USA. "*Intestinal Regeneration is Gated by the Circadian Clock.*" Karpowicz P., Zhang Y., Emery P., Hogenesch J., Perrimon N. Jul, 2013.
37. Abcam Stem Cell Research Conference, Punta Cana, Dominican Republic. "*Neural Stem Cell Self-Renewal is Dependant on E-Cadherin.*" Karpowicz P., Willaime-Morawek S., Inoue T., van der Kooy D. Dec, 2007.
38. Society for Neuroscience, San Diego, U.S.A. "*Neural Stem Cell Self-Renewal is Dependant on E-Cadherin.*" Karpowicz P., Willaime-Morawek S., Inoue T., van der Kooy D. Nov, 2007.
39. International Society for Stem Cell Research, Cairns, Australia. "*DNA Is Partitioned Asymmetrically in the Germline Stem Cells of Drosophila Melanogaster.*" Karpowicz P., Pellika M., Godt D., Tepass U. van der Kooy D. Jun, 2007. (Presentation award)

40. Society for Neuroscience, Atlanta, U.S.A. "*E-Cadherin Regulates Neural Stem Cell Self-Renewal.*" Karpowicz P., Willaime-Morawek S., Inoue T., Deveale B., Hitoshi S., van der Kooy D. Oct, 2006.
41. International Society for Stem Cell Research, Toronto, Canada. "*DNA Is Partitioned Asymmetrically During Adult Stem Cell Divisions But Not Embryonic Blastomere Divisions.*" Karpowicz P., Morshead C., Kam A., Pellikka M., Godt D., Tepass U., van der Kooy D. Jul, 2006.
42. Society for Neuroscience, Washington DC, U.S.A. "*DNA is Partitioned Asymmetrically in Adult Stem Cell Divisions But Not Embryonic Blastomere Divisions.*" Karpowicz P., Morshead C., Kam A., Godt D., Tepass U., van der Kooy D. Oct, 2005.
43. Society for Neuroscience, Washington DC, U.S.A. "*Adhesion is Prerequisite But, Alone, Is Insufficient for Neural Stem Cell Multipotency.*" Karpowicz P., Inoue T., Runciman S., Chaddah R., Gertsenstein M., Yamanaka Y., Hitoshi S., Rossant J., van der Kooy D. Oct, 2005.
44. Society for Neuroscience, San Diego, U.S.A. "*E-Cadherin Maintains Neural Stem Cells.*" Karpowicz P., Runciman S., Inoue T., Byers L., Gertsenstein M., Hitoshi S., Rossant J., van der Kooy D. Oct, 2004.
45. Society for Neuroscience, New Orleans, U.S.A. "*Neural Stem Cells Cosegregate Immortal Strand Bearing Chromosomes During Asymmetric Divisions.*" Karpowicz P., Morshead C., Cheng V., van der Kooy D. Nov, 2003. (Presentation award)
46. International Society for Stem Cell Research, Washington DC, U.S.A. "*A Case for Human Retinal Stem Cell Transplants into Non-Human Chimeras.*" Karpowicz P., Cohen C., van der Kooy D. Jun, 2003. (Travel award)

## **8. Teaching activities**

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### **8.1 Courses taught**

- Stem cells / BIOM-4510: 4<sup>th</sup> year seminar course (~30 students per year, 2015-present).
- Homeostasis and cell physiology / BIOM-3560: 3<sup>rd</sup> year course (~50 students per year, 2018-present).
- Graduate course in biomedical research methods BIOL-8018 (2020)
- Graduate course in stem cell biology 55-603 (2015-16).
- Graduate course in circadian rhythm biology 55-603 (2016-17).
- Guest lectures for evolution 55-341, and environmental Physiology 55-310
- SET scores ≥6.0 (all years)

### **8.2 Curriculum development and contribution**

- Developed 55-405 undergraduate course in stem cell biology

- Developed 55-365 undergraduate course in homeostasis and cell physiology
- Developed 55-603 graduate course in stem cell biology
- Developed 55-603 graduate course in circadian biology
- Biological Sciences Graduate Curriculum Chair (2017-2020)
- Biological Sciences Curriculum Development Committee (2014-2015)
- Assisted in updating/revising Molecular Biology and Biotechnology program curriculum (2015)
- Participant in CTL summer series (2014-15)

## **9. Volunteer and outreach activities**

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- IGNITE Medical Case Competition judge (Canadian high school science organization, 2021)
- Mentor for grade 8 students and high school students / science fairs (2015, 2016, 2019)
- Let's Talk Science / Let's Talk Cancer Program speaker (2016, 2019, 2020, 2021)
- March for Science speaker (2017)
- Detroit Kendo Club instructor (2014-present), Shufukai Kendo Club (2008-2014), Toronto Kendo Club (2003-2007)