

CURRICULUM VITAE

PERSONAL INFORMATION

Shawn David Hingtgen, Ph.D.

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EDUCATION

The University of Iowa , Iowa City, IA. Dept. of Anatomy and Cell Biology	Doctor of Philosophy (Ph.D.)	1998-2004
The University of Iowa , Iowa City, IA. Bachelor of Science	Biology	1994-1998

PROFESSIONAL EXPERIENCE

04/2018-Present	Associate Professor , Division of Molecular Pharmaceutics, UNC Eshelman School of Pharmacy, The University of North Carolina at Chapel Hill, Chapel Hill, NC
04/2108-Present	Associate Professor , Department of Neurosurgery, UNC School of Medicine, The University of North Carolina at Chapel Hill, Chapel Hill, NC (This is a secondary appointment that coincides with my primary appointment in the Eshelman School of Pharmacy)
04/2012-03/2018	Assistant Professor , Division of Molecular Pharmaceutics, UNC Eshelman School of Pharmacy, The University of North Carolina at Chapel Hill, Chapel Hill, NC
09/2106-03/2018	Assistant Professor , Department of Neurosurgery, UNC School of Medicine, The University of North Carolina at Chapel Hill, Chapel Hill, NC (This is a secondary appointment that coincides with my primary appointment in the Eshelman School of Pharmacy)
06/2010-03/2012	Instructor , Department of Radiology, Massachusetts General Hospital/Harvard Medical School, Boston, MA.
02/2008-06/2010	Post-doctoral Fellow , Dept. of Radiology, Nuclear Medicine and Molecular Imaging, Massachusetts General Hospital/Harvard Medical School, Boston, MA <ul style="list-style-type: none">• Advisor: Khalid Shah• Gained experience in mouse model of surgical resection• Developed new anti-cancer molecules for delivery by therapeutic stem cells
02/2005-02/2008	Post-doctoral Fellow , Dept. of Radiology, Center for Molecular Imaging Research (CMIR), Massachusetts General Hospital/Harvard Medical School, Boston, MA <ul style="list-style-type: none">• Advisor: Ralf Weissleder, Khalid Shah• Developed novel imaging tools for non-invasive tracking of stem cell therapies for brain cancer and novel anti-cancer molecules• Gained experience in molecular biology, molecular imaging, animal surgery

HONORS AND AWARDS

2021	American Institute for Medical and Biological Engineering College of Fellows
2018	UNC Hettleman Prize for Scholarly and Artistic Achievement by Young Faculty

- 2014 Young Investigator Award, Society for Neuro-Oncology
- 2013 Finalist, The Damon Runyon-Rachleff Innovation Award
- 2010 Keystone Symposia Underrepresented Minority Scholarship
- 2008 American Brain Tumor Association Post-doctoral Research Fellowship
- 2005 National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Minority Travel Award
- 2005 Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Award
- 2004 College of Medicine Public Health Research Week Award
- 2004 National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Minority Travel Award
- 2004 Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Award
- 2003 New Investigator Award, Society for Free Radical Biology and Medicine
- 2003 National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Minority Travel Award
- 2003 Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Award
- 2002 Merck New Investigator Award
- 2001 Honorable Mention-James F. Jackobsen Forum
- 1994-98 Undergraduate Scholar Assistant
- 1994-98 Opportunity at Iowa Underrepresented Minority Scholarship

BIBLIOGRAPHY & PRODUCTS OF SCHOLARSHIP

BOOKS AND CHAPTERS

Citation statistics from Google Scholar: *h-index: 23; Citations: 2755 (1973 in past 5 years)*

1. **Hingtgen, S.D.** Multi-functional Molecules for Interrogating Stem Cell-based Therapeutics. *Stem Cell Therapeutics for Cancer*. Hoboken, NJ, Wiley Publishing, 2013, pp. 257-272
2. Sheets, K.T., Bago, J.R., **Hingtgen, S.D.** Delivery of cytotoxic neural stem cells with biodegradable scaffolds for treatment of postoperative brain cancer. *Methods in Targeted Drug Delivery*, Springer Publishing, 2018.

REFERRED PAPERS/ARTICLES

1. Mercer-Smith, A.R., Buckley, A., Valdivia, A., Jiang, W., Thang, M., Bell, N., Kumar, R.J., Bomba, H.N., Woodell, A.S., Luo, J., Floyd, S.R., **Hingtgen, S.D.** Next-generation Tumor-homing Induced Neural Stem Cells as an Adjuvant to Radiotherapy for the Treatment of Metastatic Lung Cancer. *Mol. Ther. (Under Review)*
2. Satterlee, A.B, Dunn, D.E., Valdivia, A., Malawsky, D., Buckley, A., Gershon, T., Floyd, S., **Hingtgen, S.D.** Adapting engineered cell therapies to understand and overcome glioblastoma resistance using integrated *in vivo* and *ex vivo* models. *Mol. Ther. (Under Review)*
3. McLaughlin, J.E., Greene, J., Olsen, A.A., Coste-Sanchez, C., Jay, M., Anselmo, A., and **Hingtgen, S.** Using pre-class videos from a health professions program for pre-class learning in a biomedical graduate course. *BMC Medical Education (Under Review)*
4. Bomba, H.N., Cary-Ewend, A., Sheets, K.T., Goetz, M.J., Findlay, I.A, Mercer-Smith, A.R., Khagi, S., **Hingtgen, S.D.** Use of FLOSEAL® as a Scaffold and its Impact on Induced Neural Stem Cell Phenotype, Persistence, and Efficacy. *Bioengineering & Transla Med (In Press)*
5. Ogunnaike, E.A., Valdivia, A., Yazdimaghani, M., Leon, E., Hudson, H., Du, H., Khagi, S., Zhen, G., Savoldo, B., Ligler, F., **Hingtgen, S.D.**, Dotti, G. Fibrin-Based Gel for Loco Regional Delivery of Chimeric Antigen Receptor T Cells in Glioblastoma. *Sci. Adv.* 2021 Oct 8;7(41):eabg5841. doi: 10.1126/sciadv.abg5841. Epub 2021 Oct 6.
Impact Factor: **13.1**
6. Mercer-Smith, A.R., Jiang, W., Bago, J.R., Valdivia, A., Woodell, A.S., Montgomery, S.A., Sheets, K.T., Anders, C.K., **Hingtgen, S.D.** Cytotoxic Engineered Induced Neural Stem Cells as an Intravenous Therapy for Primary Non-Small Cell Lung Cancer and Triple-Negative Breast Cancer. *Mol Cancer Ther.* 2021 Nov;20(11):2291-2301. doi: 10.1158/1535-7163.MCT-21-0109. Online ahead of print.

Impact Factor: **6.3**

7. Mercer-Smith, A.R., Findlay, I.A, Bomba, H.N., **Hingtgen, S.D.** Intravenously infused stem cells for cancer treatment. *Stem Cell Rev Rep*. 2021 Jun 17. doi: 10.1007/s12015-021-10192-0. Online ahead of print.

Impact Factor: **5.3**

8. Jiang, W., Yang, Y., Mercer-Smith, A.R., Valdivia, A., Bago, J.R., Woodell, A.S., Buckley, A., Marand, M., Qian, L., Anders, C.K., **Hingtgen, S.D.** Development of next-generation tumor-homing induced neural stem cells to enhance treatment of metastatic cancers. *Sci Adv*. 2021 Jun 9;7(24):eabf1526. doi: 10.1126/sciadv.abf1526. Print 2021 Jun.

Impact Factor: **13.1**

9. Cary-Ewend, A., Hagler, S.B., Bomba, H.N., Goetz, M.J., Bago, J.R., **Hingtgen, S.D.** Developing Bio-inspired 3D Models of Brain Cancer to Evaluate Tumor-homing Stem Cell Therapy. *Tissue Eng. Part A* 2021 Jul;27(13-14):857-866. doi: 10.1089/ten.tea.2020.0113.

Impact Factor: **3.5**

10. Bomba, H.N., Sheets, K.T., Valdivia, A., Khagi, S., Ruterbories, L, Mariani, C.L., Borst, L.B., Tokarz, D.A., **Hingtgen, S.D.** Personalized Neural Stem Cell Therapy: Generation, Transplant, and Safety in a Large Animal Model. *Bioengineering & Transl Med* 2021 January 6(1): e10171. doi.org/10.1002/btm2.10171

Impact Factor: **N/A**

11. Gawley, M., Almond, L., Daniel, S., Lastakchi, S., Kaur, S., Detta, A., Cruickshank, G., Miler, C.R., **Hingtgen, S.D.**, Sheets, K., McConville, C.. Development and *in vivo* evaluation of Irinotecan-loaded Drug Eluting Seeds (IDES) for the Localized Treatment of Recurrent Glioblastoma Multiforme. *J Control Release*. 2020 May 11;324:1-16. doi: 10.1016/j.jconrel.2020.05.012. Online ahead of print.PMID: 32407745

Impact Factor: **7.9**

12. Buckley, A., Hagler, S.B., Lettry, V., Bago, J.R., Maingi, S.M., Khagi, S., Ewend, M.G., Miller, C.R., **Hingtgen, S.D.** Generation and profiling of tumor-homing induced neural stem cells from the skin of cancer patients. *Mol Ther*. 2020;S1525-0016(20)30204-5. doi:10.1016/j.ymthe.2020.04.022

Impact Factor: **8.4**

13. Moore K.M., Graham-Gurysh E., Bomba, H., Murthy, A., Bachelder, E.M., **Hingtgen S.D.**, Ainslie, K.M. Impact of composite scaffold degradation rate on neural stem cell persistence in the glioblastoma surgical resection cavity. *Mater Sci Eng C Mater Biol Appl*. 2020 Jun;111:110846. doi: 10.1016/j.msec.2020.110846. Epub 2020 Mar 13.PMID: 32279815

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14. Sheets, K.T., Okolie, O., Ewend, M., Mohiti-Asli, M., Turin, S., Loba, E.G., Aboody, K., **Hingtgen, S.D.** Developing Implantable Scaffolds to Enhance Neural Stem Cell Therapy for Post-operative Glioblastoma. *Mol Ther*. 2020 Apr 8;28(4):1056-1067. doi: 10.1016/j.ymthe.2020.02.008. Epub 2020 Feb 13.PMID: 32109370

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15. Graham-Gurysh E., Murthy, A.B., Moore, K.M., Satterlee A.B., Sheets, K.T., Lin, F.C., Bachelder, E.M., **Hingtgen, S.D.**, Ainslie, K.M. Synergistic Drug Combinations for a Precision Medicine Approach to Interstitial Glioblastoma Therapy. *J Control Release*. 2020 Apr 23;323:282-292. doi: 10.1016/j.jconrel.2020.04.028. Online ahead of print.PMID: 32335153

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16. Graham-Gurysh E., Moore, K.M., Schorzman, A.M., Lee, T., Zamboni, W.C., **Hingtgen, S.D.**, Bachelder, E.M., Ainslie, K.M. Tumor Responsive and Tunable Polymeric Platform for Optimized Delivery of Paclitaxel to Treat Glioblastoma. *ACS Appl Mater Interfaces*. 2020 Apr 29;12(17):19345-19356. doi: 10.1021/acsami.0c04102. Epub 2020 Apr 17.PMID: 32252517

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17. Satterlee, A.B, Dunn, D.E., Lo, D.C., Khagi, S., **Hingtgen, S.D.** Tumoricidal Stem Cell Therapy Enables Killing in Novel Hybrid Models of Heterogeneous Glioblastoma. *Neuro. Oncol.*, 2020 Aug. 17. PMID: 31420675

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18. Suryaprakash S, Lao YH, Cho HY, Li M, Ji HY, Shao D, Hu H, Quek CH, Huang D, Mintz RL, Bagó JR, **Hingtgen, S.D.**, Lee KB, Leong KW. Engineered Mesenchymal Stem Cell/Nanomedicine Spheroid as an Active Drug Delivery

Platform for Combinational Glioblastoma Therapy. *Nano Lett.* 2019 Mar 13;19(3):1701-1705. doi: 10.1021/acs.nanolett.8b04697. Epub 2019 Feb 21. PMID: 30773888

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19. Sheets, K., Bago, J.R., Paulk, I.L., **Hingtgen, S.D.**, Image Guided Resection of Glioblastoma and Intracranial Implantation of Therapeutic Stem Cell-seeded Scaffolds. *JoVE* 2018 Jul 16;(137). Doi 10.3791/57452. PMID: 30059037

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20. Okolie O, Irvin DM, Bago JR, Sheets K, Satterlee A, Carey-Ewend AG, Lettry V, Dumitru R, Elton S, Ewend MG, Miller CR, **Hingtgen, S.D.** Intra-cavity stem cell therapy inhibits tumor progression in a novel murine model of medulloblastoma surgical resection. *PLoS One.* 2018 Jul 10;13(7):e0198596. doi: 10.1371/journal.pone.0198596. eCollection 2018. PMID: 29990322

Impact Factor: **2.8**

21. Graham-Gurysh E, Moore KM, Satterlee AB, Sheets KT, Lin FC, Bachelder EM, Miller CR, **Hingtgen, S.D.**, Ainslie KM. Sustained Delivery of Doxorubicin via Acetalated Dextran Scaffold Prevents Glioblastoma Recurrence after Surgical Resection. *Mol Pharm.* 2018 Mar 5;15(3):1309-1318. doi: 10.1021/acs.molpharmaceut.7b01114. Epub 2018 Feb 2. PMID:29342360

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22. Sheets, K.T., Bajo, J.R. **Hingtgen, S.D.** Delivery of Cytotoxic Mesenchymal Stem Cells with Biodegradable Scaffolds for Treatment of Postoperative Brain Cancer. *Methods Mol Biol.* 2018;1831:49-58. doi: 10.1007/978-1-4939-8661-3_5. PMID:30051424

23. Bago, J.R., Okolie, O., Dumitru, R., Ewend, M.G., **Hingtgen, S.D.** Tumor-homing Cytotoxic Induced Neural Stem Cells for Cancer Therapy. *Sci Transl Med* 2017 Feb 1;9(375). pii: eaah6510. doi: 10.1126/scitranslmed.aah6510. PMID: 28148846

Impact Factor: **16.3**

Featured on the cover of the journal, was the cover story for the NIH NCATS website, and featured in numerous other on-line and media outlets including "The Stem Cell Podcast", Genetic Engineering & Biotechnology news, and the international TV show "Carte Blanche".

24. Lettry, V., Hagler, S.B., Khagi, S, **Hingtgen, S.D.**, Tumor-homing Stem Cell Therapy for Brain Cancer. *Curr. Surg. Rep (2017)*, .5: 28. <https://doi.org/10.1007/s40137-017-0190-5>

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25. Okolie, O., Bago, J.R., Schmid, R.S., Irvin, D.M., Bash, R.E., Miller, C.R., **Hingtgen, S.D.** Reactive Astrocytes Potentiate Tumor Aggressiveness in a Murine Glioma Resection Recurrence Model. *Neuro Oncol.* June 13, 2016 PMID: 27298311

Impact Factor: **7.4** (leading journal in the field)

26. Bago, J.R., Pegna, G.L., Okolie, O., Mohiti-Asli, M., Lobo, E.G., **Hingtgen, S.D.** (2016). Electrospun nanofibrous scaffolds increase the efficacy of stem cell-mediated therapy for surgically resected glioblastoma. *Biomaterials*, (2016) Jun;90:116-25. PMID: 2701662

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27. Bago, J.R., Alfonso-Pecchio, A., Okolie, O., Dumitru, R., Rinkenbaugh, A., Baldwin, A.S., Miller, C.R., Magness, S.T., **Hingtgen, S.D.** (2016). Therapeutically engineered induced neural stem cells are tumor-homing and inhibit progression of glioblastoma. *Nat. Commun.*, Feb 2;7:10593. PMID: 26830441

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28. Bago, J.R., Pegna, G.L., Okolie, O., **Hingtgen, S.D.** (2016). Fibrin matrices enhance the transplant and efficacy of cytotoxic stem cell therapy for post-surgical cancer. *Biomaterials*, (2016) Apr;84:42-53. PMID: 26803410

Impact Factor: **8.4**

29. Bago, J.R., Sheets, K.T., **Hingtgen, S.D.** (2015). Neural Stem Cell Therapy for Cancer. *Methods.* 2015 Aug 24; S1046-2023 doi: 10.1016/j.ymeth.2015.08.013. [Epub ahead of print]

Impact Factor: **3.5**

30. Kim MS, Haney MJ, Zhao Y, Mahajan V, Deygen I, Klyachko NL, Inskoe E, Piroyan A, Sokolsky M, Okolie O, **Hingtgen, S.D.**, Kabanov AV, Batrakova EV. Development of exosome-encapsulated paclitaxel to overcome MDR in cancer cells. *Nanomedicine*. 2015 Nov 14.

Impact Factor: **4.4**

31. Stuckey D.W.*, **Hingtgen S.D.***, Karakas N., Rich B.E., Shah K. Engineering toxin-resistant therapeutic stem cells to treat brain tumors. *Stem Cells*. 2014 Oct. [Epub]. PMID: 25346520 (PMC Journal in process). *co-first authors.

Impact Factor: **5.9**

32. Duebgen M., Martinez-Quitanilla J., Tamura K., **Hingtgen S.D.**, Redjal N., Wakimoto H., Shah K. Stem cells loaded with multimechanistic oncolytic herpes simplex virus variants for brain tumor therapy. *J Natl. Cancer Inst*. 2014 May 16; 106 (6) [Epub ahead of print]. PMID: 24838834 (PMC Journal in process)

Impact Factor: **12.6**

33. Klyachko N.L., Haney M.H., Zhao Y., Manickam D.S., Mahajan V., Suresh P., **Hingtgen, S.D.**, Mosley R.L., Gendelman H.E., Kabanov A.V., Batrakova E.V. (2013) Macrophages Offer a Paradigm Switch for CNS Nanozyme Delivery, *Nanomedicine*. 2013 Nov 18. [Epub ahead of print]

Impact Factor: **4.4**

34. Haney M.J., Zhao Y., Harrison E.B., Mahajan V., Ahmed S., He Z., Suresh P., **Hingtgen S.D.**, Klyachko N.L., Mosley R.L., Gendelman H.E., Kabanov A.V., Batrakova E.V. (2013) Specific Transfection of Inflamed Brain by Macrophages: A New Therapeutic Strategy for Neurodegenerative Diseases. *PLoS One* 2013 Apr 19;8(4): e61852. PMID: 23620794

Impact Factor: **3.2**

35. **Hingtgen, S.D.** Glioblastoma Therapy. *Encyclopedia of Cancer*. In: Schwab M. (Ed.) *Encyclopedia of Cancer*: SpringerReference (www.springerreference.com). Springer-Verlag Berlin Heidelberg. DOI: 10.1007/SpringerReference_332223 2012-11-11 12:16:21 UTC

Impact Factor: **NA**

36. **Hingtgen, S.D.**, Figueiredo, J.F., Ferrar, C., Shah, K. A multi-modality image-guided mouse model of Glioblastoma resection and recurrence. *J. Neuroonc.* 2012 Dec 16. [Epub ahead of print]

Impact Factor: **3.1**

37. **Hingtgen, S.D.**, Sarkar, D., Yacoub, A., Fisher, P.B., Shah, K. A first-generation multi-functional cytokine for simultaneous optical tracking and tumor therapy. *PLoS One* 2012;7(7):e40234

Impact Factor: **3.2**

38. Kauer, T.M., Figueiredo, J.F., **Hingtgen, S.D.**, Shah, K. Novel approach to deliver stem-cell based therapy in a mouse model of glioma resection. *Nat Neurosci*. 2011 Dec 25;15(2):197-204.

Impact Factor: **16.7**

39. **Hingtgen, S.D.**, Kasmieh, R., van de Water J.A., Figueiredo, J.L., Weissleder, R., Shah, K. A novel molecule integrating therapeutic and diagnostic activities reveals multiple aspects of stem cell-based therapy. *Stem Cells*. 2010 Apr;28(4):832-41.

Impact Factor: **5.9**

40. **Hingtgen, S.D.**, Li, Z., Kutschke, W., Tian, X., Sharma, R.V., Davisson, R.L. Superoxide Scavenging and AKT Inhibition in the Myocardium Ameliorate Pressure Overload-induced NFκB Activation and Cardiac Hypertrophy. *Physiol Genomics*. 2010 Apr;41:127-136.

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41. Sasportas, L.S., Kasmieh, R., Wakimoto, H., **Hingtgen, S.D.**, van de Water J.A., Mohapatra, G., Figueiredo, J.L., Martuza, R.L., Weissleder, R., Shah, K. Assessment of therapeutic efficacy and fate of engineered human mesenchymal stem cells for cancer therapy. *Proc Natl Acad Sci U S A*. 2009 Mar 24;106(12):4822-7.

Impact Factor: **9.4**

42. **Hingtgen, S.D.**, Ren, X., Terwilliger, E.F., Classon, M., Weissleder, R., Shah, K. Targeting Multiple Pathways in Gliomas with Stem Cell and Viral Delivered S-TRAIL and Temozolomide. *Mol Cancer Ther*. 2008 Nov;7(11):3575-85

Impact Factor: **5.6**

43. Shah, K., **Hingtgen, S.D.**, Kasmieh, R., Figueiredo, J.L., Martinez-Serrano, A., Breakefield, X.O., Weissleder, R. Bimodal viral vectors and in vivo imaging reveal the fate of human neural stem cells in experimental glioma model. *J Neurosci* 2008 April 28(17):4406-4413

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44. Arwert, E., **Hingtgen, S.D.**, Figueiredo, J.L., Bergquist, H., Mahmood, U., Weissleder, R., Shah, K. Visualizing the dynamics of EGFR activity and antiglioma therapies in vivo. *Cancer Res.* 2007 Aug 1;67(15):7335-42

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45. **Hingtgen, S.D.**, Tian, X., Sharma, R.V., Davisson, R.L. A gp91^{phox}-Containing NADPH Oxidase is a Key Signaling Molecule in Angiotensin II-Induced Cardiomyocyte. *Physiol Genomics* 2006 Aug; 26 (3):180-91

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47. **Hingtgen, S.D.**, Davisson, R.L. Gene therapeutic approaches to oxidative stress-induced cardiac disease: principles, progress and prospects. *Antioxid. Redox Signal.* 2001 Jun; 3(3):433-49

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REFEREED ABSTRACTS

1. Morrent, T, Jiang, W., Valdivia, A., Mercer-Smith, A.R., Anders, C.K., **Hingtgen, S.D.** Tumor-homing Induced Neural Stem Cell Therapy Inhibits the Progression of Breast Cancer Brain Metastasis and Leptomeningeal Carcinomatosis. *Society for Neuro-oncology. November 18-20, 2021.*
2. Mann, B., Bell, N., Dunn, D.E., Floyd, S., **Hingtgen, S.D.**, Satterlee, A.B., An organotypic tissue platform to bridge in vitro and in vivo assays for brain cancer treatment. *Society for Neuro-oncology Meeting. November 18-20, 2021.*
3. Jiang, W., Valdivia, A., Mercer-Smith, A.R., Anders, C.K., **Hingtgen, S.D.** Tumor-homing Induced Neural Stem Cell Therapy Inhibits the Progression of Breast Cancer Brain Metastasis and Leptomeningeal Carcinomatosis. *Society for Neuro-oncology Meeting. November 19-21, 2020. Held Virtually*
4. Mercer-Smith, A.R., Jiang, W., Valdivia, A., Bago, J.R., Floyd, S., Khagi, S., **Hingtgen, S.D.** Tumor-homing induced neural stem cells secreting a cytotoxic payload as an adjuvant treatment for non-small cell lung cancer brain metastases. *Society for Neuro-oncology Brain Metastasis Meeting. November 19-21, 2020. Held Virtually*
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6. Mercer-Smith, A.R., Jiang, W., Valdivia, A., Bago, J.R., Floyd, S., Khagi, S., **Hingtgen, S.D.** Tumor-homing induced neural stem cells secreting a cytotoxic payload as an adjuvant treatment for non-small cell lung cancer brain metastases. *Society for Neuro-oncology Brain Metastasis Meeting. August 14, 2020. Held Virtually*
7. Satterlee, A., Dunn, D., Floyd, S., **Hingtgen, S.D.** Understand and Overcoming Glioblastoma Resistance with Novel In Vivo and Ex Vivo Models. American Society of Cell & Gene Therapy. *American Society of Gene and Cell Therapy Annual Meeting. May 12-15, 2020. Held Virtually*
8. Bomba, H.N., Sheets, K.T., Valdivia, A., Khagi, S., Ruterbories, L, Mariani, C.L., Borst, L.B., Tokarz, D.A., **Hingtgen, S.D.** Personalized Neural Stem Cell Therapy: Generation, Transplant, and Safety in a Large Animal Model. *American Society of Gene and Cell Therapy Annual Meeting. May 12-15, 2020. Held Virtually*
9. Jiang, W., Mercer-Smith, A, Anders, C.A., **Hingtgen, S.D.**, Personalized tumor-homing cell-based treatments for metastatic cancer *American Society of Gene and Cell Therapy Annual Meeting. May 12-15, 2020. Held Virtually*
10. Gopakumar, S., Gumin, J., Daou, M., Ledbetter, D., McDonald, M.F., Hossain, A., **Hingtgen, S.D.**, Ewend, M.G., Lang, F.F. Stem cell delivery of oncolytic adenovirus DNX-2401 following surgical resection for the treatment of glioblastoma. *Society for Neuro-oncology Annual Meeting. November 19-23, 2019. Phoenix, AZ*

11. Satterlee, A., Dunn, D., Floyd, S., **Hingtgen, S.D.** Adapting Engineered Cell Therapies to Understand and Overcome Glioblastoma Resistance Using Integrated In Vivo and Ex Vivo Models. *Society for Neuro-oncology Annual Meeting. November 19-23, 2019. Phoenix, AZ*
12. Bomba, H, Sheets, K.T., Carey-Ewend, A., Goetz, M., Bago, J.R., Khagi, S., **Hingtgen, S.D.** Increasing Induced Neural Stem Cell Persistence in the Tumor Resection Cavity. *Society for Neuro-oncology Annual Meeting. November 19-23, 2019. Phoenix, AZ*
13. Jiang, W., Mercer-Smith, A, Anders, C.A., **Hingtgen, S.D.** Creating personalized tumor-homing cell-based treatments for metastatic brain cancer. *Society for Neuro-oncology Brain Metastasis Meeting. September 15-17, 2019. New York, NY*
14. Jiang, W., Mercer-Smith, A, Anders, C.A., **Hingtgen, S.D.** Development of tumor-homing cell therapy for breast cancer. *American Society of Gene and Cell Therapy Annual Meeting. April 29-May 2, 2019. Washington D.C.*
15. Hagler, S., Bago, J.R., Ewend, M.E., **Hingtgen, S.D.** Developing patient-derived induced neural stem cells therapy for glioblastoma. *American Society of Gene and Cell Therapy Annual Meeting. April 29-May 2, 2019. Washington D.C.*
16. Satterlee, A., Dunn, D.E., Lo, D.C., Khagi, S., **Hingtgen, S.D.** Tumoricidal Stem Cell Therapy Enables Killing in Novel Hybrid Models of Heterogeneous Glioblastoma. *American Society of Gene and Cell Therapy Annual Meeting. April 29-May 2, 2019. Washington D.C.*
17. Sheets, K.T., Okolie, O., Ewend, M., Mohiti-Asli, M., Turin, S., Loba, E.G., Aboody, K., **Hingtgen, S.D.** Creating Implantable Scaffolds to Enhance Neural Stem Cell Therapy for Post-surgical Glioblastoma. *Society for Neuro-Oncology Annual Meeting. November 14-17, 2018. New Orleans, LA*
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19. Sheets, K.T., Okolie, O., Ewend, M., Mohiti-Asli, M., Turin, S., Loba, E.G., Aboody, K., **Hingtgen, S.D.** Implantable Scaffolds Enhance Neural Stem Cell Therapy for Post-surgical Glioblastoma. *American Society of Gene and Cell Therapy Annual Meeting. May 16-19, 2018. Chicago, IL*
20. Hagler, S., Bago, J.R., Ewend, M.E., **Hingtgen, S.D.** Characterizing patient-derived induced neural stem cells as drug delivery platform for glioblastoma. *American Society of Gene and Cell Therapy Annual Meeting. May 16-19, 2018. Chicago, IL*
21. Okolie, O., Irvin, D.M., Bago, J.R., Sheets, K., Satterlee, A., Dumitru, R., Elton, S., Ewend, M.G., Miller, C.R., **Hingtgen, S.D.** Investing Intra-Cavity Stem Cell Therapy For Post-operative Medulloblastoma. *American Society of Gene and Cell Therapy Annual Meeting. May 10-13, 2017. Washington D.C.*
22. Sheets, K.T., Okolie, O., Khagi, S., Ewend, M.G., Mohiti-Asli, M., Tuin, S., Loba, E.G., Aboody, K., **Hingtgen, S.D.** Engineering Polymeric Scaffolds to Improve the Transplant and Efficacy of Neural Stem Cell Therapy for Post-operative Glioblastoma. *American Society for Gene and Cell Therapy Annual Meeting. May 10-13, 2017. Washington D.C.*
23. Okolie, O., Bago, J.R., Miller, C.R., **Hingtgen, S.D.** Astrocytes Enhance Glioma Aggressiveness in a Mouse Models of Resection and Recurrence. *Society for Neuro-Oncology Annual Meeting. November 17-20, 2016. Scottsdale, AZ*
24. Sheets, K.T., Okolie, O., Khagi, S., Ewend, M.G., Mohiti-Asli, M., Tuin, S., Loba, E.G., Aboody, K., **Hingtgen, S.D.** Polymeric Scaffolds to Enhance Neural Stem Cell Therapy for Post-operative Glioblastoma. *Society for Neuro-Oncology Annual Meeting. November 17-20, 2016. Scottsdale, AZ*
25. Bago, J.R., Okolie, O., Dumitru, R., Ewend, M.G., **Hingtgen, S.D.** Tumor-homing Human Induced Neural Stem Cells: Towards Personalized Cell Therapy for Glioblastoma. *Gordon Research Conference on Drug Carriers in Medicine & Biology. August 7-12, 2016 Waterville Valley, NH*
26. Bago, J.R., Pegna, G.J., Okolie, O., Mohiti-Asli, M., Loba, E.G., **Hingtgen, S.D.** Developing polymeric bio-scaffolds that increase the efficacy of stem cell-mediated therapy for brain tumors. *American Society of Cell and Gene Therapy Annual Meeting. April 4-7, 2016. Washington D.C.*
27. Bago, J.R., Okolie, O., Mohiti-Asli, M., Loba, E.G., **Hingtgen, S.D.** Developing novel bio-scaffolds that enhance the efficacy of stem cell-mediated therapy for brain tumors. *Society for Neuro-Oncology Annual Meeting. November 17-20, 2015. San Antonio, TX*

28. Bago, J.R., Sheet, K.R., Okolie, O., Mohiti-Asli, M., Loba, E.G., **Hingtgen, S.D.** Biocompatible scaffolds improve the transplant and efficacy of stem cell-mediated therapy for post-surgical brain tumors. *UNC Small Animal Imaging Symposium. October, 22, 2015, UNC Chapel Hill, Chapel Hill, NC- Awarded best poster.*
29. Bago, J.R., Okolie, O., Dumitru, R., Ewend, M.G., **Hingtgen, S.D.** Tumor-homing Human Induced Neural Stem Cells: Towards Personalized Cell Therapy for Glioblastoma *North Carolina Tissue Engineering and Regenerative Medicine Society. October 16, 2015. Wake Forest University, Winston Salem, N.C.*
30. Bago, J.R., Sheet, K.R., Okolie, O., Mohiti-Asli, M., Loba, E.G., **Hingtgen, S.D.** Polymeric bio-scaffolds increase the efficacy of stem cell-mediated therapy for brain tumors. *North Carolina Tissue Engineering and Regenerative Medicine Society. October 16, 2015. Wake Forest University, Winston Salem, N.C.*
31. Bago, J.R., Okolie, O., Dumitru, R., Ewend, M.G., **Hingtgen, S.D.** *Engineered induced neural stem cells for cancer therapy.* Association for Clinical and Translational Science Meeting, April 16-18, 2015. Washington D.C.
32. Alfonso-Pecchio, A., Bago, J.R., Okolie, O., Dumitru, R., **Hingtgen, S.D.** Engineered Induced Neural Stem Cells are Tumor-homing Drug Carriers the Regress Glioblastoma. *Society for Neuro-Oncology Annual Meeting. November 13-17, 2014. Miami, FL.- Young Investigator Award presentation.*
33. Alfonso-Pecchio, A., Bago, J.R., Okolie, O., Dumitru, R., **Hingtgen, S.D.** Therapeutically engineered induced neural stem cells for glioblastoma therapy. *North Carolina Tissue Engineering and Regenerative Medicine Society. October 13, 2014. Duke University, Durham, N.C.*
34. **Hingtgen, S.D.**, Kasmieh, R, Nesterenko, I, Figueiredo, J.F., Dash, R., Sarkar, D., Fisher, P.B., Shah, K. Exploring Multiple Aspects of Stem Cell-based Therapy for Cancer Using Novel Multi-functional Molecules. *Society for Neuro-Oncology Annual Meeting. November 14-18, 2013. Washington D.C.*
35. **Hingtgen, S.D.** Developing Stem Cell-based Therapies for Cancer Treatment. Inagural UNC/NC State Joint Symposium on Stem Cells and Regenerative Medicine. *October 15, 2013, Raleigh, NC.*
36. **Hingtgen, S.D.** Using Novel Multi-functional Molecules to Develop Stem Cell-based Therapies for Cancer Using. National Institute of Health Stem Cell Symposium. *March 28, 2013, Research Triangle Park, NC.*
37. **Hingtgen, S.D.**, Figueiredo, J.F., Ferrar, C., Duebgen, M., Martinez-Quitanilla, J., Bhere, D., Shah, K. Developing a glioblastoma surgical resection using multi-modality imaging. *UNC Radiology Research Day. January 18, 2013, Chapel Hill, NC.*
38. **Hingtgen, S.D.**, Figueiredo, J.F., Ferrar, C., Duebgen, M., Martinez-Quitanilla, J., Bhere, D., Shah, K. Real-time assessment of glioblastoma surgical resection and recurrence using multi-modality imaging. *Society for Neuro-Oncology Annual Meeting. November 14-18, 2012. Washington D.C.*
39. **Hingtgen, S.D.**, Kasmieh, R., van de Water J.A., Figueiredo, J.L., Shah, K. Determining Multiple Aspects of Stem Cell-based Therapies using Novel Diagnostic and Therapeutic Multifunctional Molecules. *Keystone Symposia on Stem Cell Differentiation & Dedifferentiation, February 15-20, 2010, Keystone, CO.*
40. **Hingtgen, S.D.**, Kasmieh, R., Figueiredo, J., Weissleder, R., and Shah, K. Fate and therapeutic efficacy of neural Stem Cells in mouse model of glioma. (2008) *Society for Neuro-Oncology.*
41. **Hingtgen, S.D.**, Kasmieh, R., Terwilliger, E.F., Weissleder, R., and Shah, K. Adeno-associated viral vector encoding secretable TRAIL inhibits glioma progression assessed by bioluminescent imaging. *Society for Molecular Imaging Annual Meeting, September 8-11, 2007. Providence, RI.*
42. **Hingtgen, S.D.**, Kasmieh, R., Figueiredo, J., Chung, S., Kim, K., Weissleder, R., and Shah, K. *In vivo* imaging of embryonic stem cell-derived neural precursor cells and gliomas transduced with bi-modal lentiviral vectors. *Society for Molecular Imaging Annual Meeting, September 8-11, 2007. Providence, RI.*
43. Arwert, E., **Hingtgen, S.D.**, Figueiredo, J., van de Water, J., Bergquist, J., Mahmood, U., Weissleder, R., and Shah, K. Visualizing the dynamics of EGFR activity and anti-glioma therapies *in vivo*. *Society for Molecular Imaging Annual Meeting, September 8-11, 2007. Providence, RI.*
44. **Hingtgen, S.D.**, Kasmieh, R., Weissleder, R., Shah, K. (2006). Using bi-modal viral vectors for imaging delivery of S-TRAIL and fate of gliomas *in vivo*. *Society for Molecular Imaging Annual Meeting, August 31-September 2, 2006. Kona, HI.*
45. Shah, K, **Hingtgen, S.D.**, Kasmieh, R., Figueiredo, J.L., Weissleder, R. (2006). *In Vivo* Imaging of Human NSC Fate in Mouse Glioma Models. *Society for Molecular Imaging Annual Meeting, August 31-September 2, 2006. Kona, HI.*

46. Sharma, R.V., **Hingtgen, S.D.**, Yang, J, Li, Z, Tian, X, Kutschke, W, Engelhardt, J.F., Davisson, R.L. (2005). Activation of Akt by Superoxide ($O_2^{\cdot-}$) is Required for NF κ B Activation and Cardiac Hypertrophy. *FASEB J.* 19:A136.
47. **Hingtgen, S.D.**, Tian, X, Li, Z, Kutschke, W, Sharma, R.V., Davisson, R.L. (2005). gp91^{phox} is the Predominant Nox Homologue Expressed in Cardiomyocytes and siRNA-Mediated Silencing of its Expression Abolishes Ang II-Induced Superoxide Generation and Cardiomyocyte Hypertrophy. *FASEB J.* 19:A388
48. **Hingtgen, S.D.**, Kutschke, W., , Li, Z., Sharma. R.V., Davisson, R.L. (2004). Bioluminescent Imaging of Pressure Overload-Induced Myocardial NF κ B Activation In Vivo: Role of Superoxide ($O_2^{\cdot-}$). *Hypertension.* 44:538
49. **Hingtgen, S.D.**, Tian, X., Sharma, R.V., Davisson, R.L. (2004). The Role of gp91phox in Angiotensin II (AngII)-induced Cardiomyocyte Hypertrophy. *FASEB J.* 18:A279
50. **Hingtgen, S.D.**, Yang, J., Sharma, R.V., Engelhardt, J.E., Davisson, R.L. (2003). Angiotensin (AngII)-Induced Cardiomyocyte Hypertrophy: Role of Reactive Oxygen Species, NF κ B, and Akt/Protein Kinase B. *Free Radical Biol. Med.* 35:S66
51. Ma, X., Sigmund, C.D., **Hingtgen, S.D.**, Tian, X., Davisson, R.L., Abboud, F.M., Chapleau, M. W. (2003). Significant Contribution of a Ganglionic Action of Endogenous Angiotensin to Sympathetic Nerve Activity in Renin-angiotensin Double Transgenic Mice. *Hypertension.* 42:408
52. **Hingtgen, S.D.**, Yang, J., Sharma, R.V., Engelhardt, J.E., Davisson, R.L. (2003). Angiotensin II (AngII)-Induced Cardiomyocyte Hypertrophy: Role of Reactive Oxygen Species and Akt/Protein Kinase B. *FASEB J.* 17:A883
53. **Hingtgen, S.D.**, Yang, J., Wise, M.E., Engelhardt, J.E., Davisson, R.L. (2001). Angiotensin II-Induced Cardiomyocyte Hypertrophy: Role of Rac1-Activated NAD(P)H Oxidase and Reactive Oxygen Species. *Hypertension.* 38:510-511
54. **Hingtgen, S.D.**, Yang, J., Wise, M.E., Hill, J.A., Engelhardt, J.E., Davisson, R.L. (2000). Role of reactive oxygen species in angiotensin II-induced cardiomyocyte hypertrophy. College of Medicine Research Week, The University of Iowa Carver College of Medicine.
55. Yang, J., **Hingtgen, S.D.**, Hill, J.A., Wise, M.E., Engelhardt, J.F., Davisson, R.L. (2000). Reactive oxygen species mediate angiotensin II-induced cardiomyocyte hypertrophy. *Circulation.* 102:S642.
56. Yang, J., Hjelmstad M., **Hingtgen, S.D.**, Ritchie, T.L., Hill, J.A., Davisson, R.L., Engelhardt, J.F. (2000). Redox Modulating Gene Therapy for Myocardial Ischemia/Reperfusion Injury. *Mol. Ther.* 1:S257.

INVITED ORAL PRESENTATIONS (Only invitations associated with UNC research are listed)

1. New Approaches to Treatments for Ovarian Cancer, *SheROCKS Event, October 14, 2021. Attended Virtually*
2. Developing Novel Cellular Medicines for Ovarian Cancer, *SheROCKS Triad Event, September 24, 2021. Attended Virtually*
3. Cell Therapies for Ovarian Cancer, *SheROCKS Event, November 5, 2020. Held Virtually*
4. Creating a novel tissue platform for personalized cancer therapy. *The University of Florida, January 22-23, 2020, Gainesville, FA*
5. Developing Personalized Tumor-homing Cell Therapies for Cancer, *J. Craig Venter Institute, October 8, 2019. La Jolla, CA*
6. Developing Therapies for Ovarian Cancer, *SheROCKS Event, November 4, 2019. Wilmington, N.C.*
7. A Novel Tissue Platform to Rapidly Elucidate Therapeutic Vulnerabilities of Pediatric Brain Cancer, *Ian's Friends Foundation, September 13-14, 2019. Atlanta, GA*
8. Tumor-homing Cell Therapy for Cancer, *SheROCKS Event, November 1, 2018. Wilmington, N.C.*
9. Accelerate Brain Cancer Cure, Emerging Leaders Workshop, *The Case Foundation, October 9-11, 2018. Washington D.C.*
10. Developing Personalized Stem Cell Therapies for Cancer, *National Center for Advancing Translational Sciences, April 11, 2018. Washington D.C.*
11. Testing Tumor-homing Stem Cell Therapies in Unique Models of Cancer, *3D Tissue Models of Cancer, April 8-9, 2018. Boston, MA.*

12. For All Kind. The University of North Carolina at Chapel Hill Campaign Launch, *The University of North Carolina at Chapel Hill, October 6, 2017. Chapel Hill, NC.*
13. Towards Personalized Stem Cell Therapies for Cancer, *The New York Stem Cell Foundation, October 23, 2017. New York, NY.*
14. Stem Cell Therapies and Novel Technology. The High Content Analysis and 3D Screening Summit, *November 6 2017. Boston MA.*
15. Investigating Intra-Cavity Stem Cell Therapy For Post-operative Medulloblastoma. *American Society of Gene and Cell Therapy Annual Meeting. May 10-13, 2017. Washington D.C.*
16. Light-activated Cell Therapies for Cancer: Replacing the Scalpel with a Laser. *Eshelman Institute for Innovation Symposium, The University of North Carolina at Chapel Hill, April 26, 2017. Chapel Hill, NC.*
17. Advancing Stem Cell Therapies for Cancer Towards the Clinic. *The Chancellors Philanthropic Council, The University of North Carolina at Chapel Hill, April 21, 2017. Chapel Hill, NC.*
18. Developing Cell-based Therapies for Cancer. *The University of Nebraska, March 31, 2017. Omaha, NE.*
19. Molecular Imaging to Develop Stem Cell Therapies for Cancer. *Triangle Imaging Symposium. The University of North Carolina at Chapel Hill, March 15, 2017. Chapel Hill, NC.*
20. Creating Stem Cell Therapies to Treat Cancer. School of Pharmacy. *The University of Birmingham, March 1, 2017. Birmingham, United Kingdom.*
21. Developing Personalized Tumor-homing Stem Cell Therapies for Cancer: The Perspective of a K Scholar. *The University of Buffalo Translational Science Institute, February 14-15, 2017. Buffalo, NY.*
22. Tumor-homing Stem Cell Therapy for Cancer. *Chapel Hill Rotary Society, February 10, 2017, Chapel Hill, NC.*
23. Accelerating the Achievement of Translational Milestones within the KL2 Scholar Program at NC TraCS. *National Institute of Health Clinical and Translational Science Awards Consortium Fall Meeting, October 25, 2016. Chicago, IL.*
24. Stem Cell Therapy: A New Approach to Cancer Therapy. *UNC Living Legends, UNC Friday Center, October 28, 2016. Chapel Hill, NC.*
25. Tumor-homing Stem Cell Therapy for Metastatic Breast Cancer. *UNC Division of Hematology-Oncology Annual Retreat. Carolina Club, October 14, 2016. Chapel Hill, NC.*
26. Stem Cell Therapy for Cancer. *Coulter Lecture Series, North Carolina State University, August 26. 2016. Raleigh, NC.*
27. Personalized Stem Cell Therapy for Cancer. *OneCarolina Symposium, UNC Development Team, UNC Friday Center, June 13, 2016. Chapel Hill, NC.*
28. Advancing Stem Cell Therapy for Cancer Towards the Clinics. *UNC Friends Fighting Cancer, May 22, 2016. Raleigh, N.C.*
29. Human Induced Neural Stem Cell Therapy for Cancer: Towards Personalized Cell Therapy. *American Society of Cell and Gene Therapy Annual Meeting. April 4-7, 2016. Washington D.C.*
30. Cell Therapies for Cancer. *Carolina Nanoformulations Workshop. March 15, 2016. Chapel Hill, NC. (2015)*
31. Creating tumor-homing Human Induced Neural Stem Cells for Personalized Cancer Therapy. *Society for Neuro-Oncology Annual Meeting. November 17-20, 2015. San Antonio, TX.*
32. Treating Cancer with Engineered Stem Cells. *UNC Neuroscience Center Seminar Series, November 4, 2015, Chapel Hill, NC.*
33. Developing Stem Cell-mediated Therapies for Cancer. *University of North Carolina Board of Trustees, October 1, 2015. Chapel Hill, NC.*
34. A New Approach to Cancer Therapy: Engineered Stem Cells. *University of North Carolina Development Team, May 18, 2015. Chapel Hill, NC.*
35. Tumor-homing Stem Cell Therapies: A New Approach to Treating Cancer. *UNC Eshelman School of Pharmacy, 50Plus Reunion, May 9, 2015. Chapel Hill, NC.*
36. Tumor-homing Stem Cell Treatment for Brain Cancer. *UNC Department of Neurosurgery Grand Rounds. May 8, 2015. Chapel Hill, NC.*

37. Stem cell-mediated Therapy for Cancer. *Lineberger Comprehensive Cancer Center Joint Retreat, December 1, 2014. Chapel Hill, NC.*
38. Engineered Induced Neural Stem Cells are Tumor-homing Drug Carriers that Prevent Glioblastoma Progression. *The Society for Neuro-Oncology Annual Meeting. November 14, 2014. Miami, FL.*
39. Stem Cell-based Therapies for Cancer: An Innovative Treatment. *The Institute for Clinical and Translational Science, The University of Iowa, August 8, 2014. Iowa City, IA.*
40. Induced Neural Stem Cell-Based Therapies: An Innovative Approach to Glioblastoma Therapy. *The Damon Runyon Foundation. November 14, 2013. New York, NY.*
41. Developing Stem Cell Therapy for Cancer. *Association for Clinical and Translational Science Annual Meeting. April 9-11, 2014. Washington D.C.*
42. Stem Cell-based Delivery of Targeted Therapeutics For Cancer Therapy. *Wake Forest Institute for Regenerative Medicine. November 10, 2013. Winston-Salem, NC.*
43. Developing Stem Cell-based Therapies for Cancer. *The University of North Carolina Lineberger Comprehensive Cancer Center's Annual Research Day. April 22, 2013, Chapel Hill, NC.*

PRODUCTS OF ENGAGED SCHOLARSHIP

PRESS/MEDIA FEATURES

November 1, 2019	WTVD ABC11: <i>UNC, Duke Join Forces to Help Fight Childhood Brain Cancer</i>
October 13, 2017	Carte Blanche TV: <i>Brain Cancer Hunters</i>
May 1, 2017	NIH NCATS Translational Science Highlights: <i>CTSA Program Mentoring Paves Way for Brain Cancer Therapy</i>
April 2, 2017	UNC TV, Science: <i>Glioblastoma Tumor Removal Can Actually Increase Growth</i>
March 28, 2017	The Stem Cell Podcast
February 6, 2017	theverge.com: <i>The next weapon against brain cancer may be human skin</i>
February 2, 2017	genengnews.com: <i>Brain cancer treatment puts skin in the game</i>
February 2, 2017	Newatlas.com: <i>Stem cells beat the clock for brain cancer</i>
February 1, 2017	Sciencemag.org: <i>Reprogrammed skin cells shrink brain tumors in mice</i>
December 19, 2016	Lineberger Comprehensive Cancer Center: <i>Funding brochure, featured story</i>
May 31, 2016	WNCN News: <i>At UNC, stem cell treatment for brain tumors shows promise.</i>
March 30, 2016	Radio In Vivo: <i>Stem Cell Therapy for Cancer.</i>
March 10, 2016	WRAL News: <i>Stem cells may increase survival for brain cancer patients.</i>
February 24, 2016	UNC News: <i>UNC researchers make groundbreaking discovery, use skin cells to kill cancer</i>
February 24, 2016	Carolina Alumni Review: <i>Skin cells-to-stem cells can destroy brain tumors.</i>
February 24, 2016	Oncologia.com: <i>Groundbreaking discovery made uses skin cells to kill cancer</i>
February 2, 2016	The News & Observer: <i>'A big step': UNC researchers use stem cells to treat brain cancer</i>
September 27, 2015	Daily Tarheel: <i>\$100 million gift prompts innovation in Pharmacy School</i>

ENTREPRENEURIAL ACTIVITIES

Filed Patents

1. Hingtgen, S.D., Dumitru, R., Bago, J.R., "Methods for Making Neural Stem Cells and Uses Thereof", March 8, 2015. PCT/US2016/020649. *Licensed to Falcon Therapeutics.*
2. Hingtgen, S.D., Pegna, G.J., Bago, J.R., "Delivery Vehicles for Neural Stem Cells and Uses Thereof", March 16, 2015. PCT/US2016/024896. *Licensed to Falcon Therapeutics.*
3. Hingtgen, S.D., Nichols, S. "Transdifferentiated Cell Compositions and Methods for Use in Therapeutic Methods", January 15, 2019. PCT/US2019/62/792,837.
4. Hingtgen, S.D., Nichols, S. "Tumor Homing Cell Compositions For Use In Therapeutic Methods". November 20, 2019. PCT/US2019/059532.

Start-up Company

Falcon Therapeutics-Launched September 2015

- Shawn Hingtgen, Ph.D.: *Founding Scientist, SAB and BOD member*

The goal of Falcon Therapeutics is to advance the discoveries generated in the Hingtgen Lab towards the clinic to redefine the care for patients with cancers that are currently incurable. Our lead product is a personalized stem cell therapy/biomaterial combination device designed initially for treatment of cancer. We are expanding this platform technology for a variety of cancer types and working to launch first-in-human trials.

Related Activities

2015 Selected for participation in the *Chancellor's Faculty Entrepreneurial Boot Camp*

2014 Selected for membership in the *4D Program* whose goal is to advance medical innovations towards commercial endpoints.

IRB PROTOCOLS

IRB #: 13-0839

PI: Hingtgen

Approval date: 05/30/2013-07/13/2016

Enrollment: 30 patients

Status: Completed

Title: LCCC 1308: Engineering Reprogramed Patient-derived Neural Stem Cells for Novel Malignant Glioma Therapy

Goal: To allow the collection of skin punch biopsy samples from patients diagnosed with glioblastoma. At the time of surgery for tumor debulking, a small skin punch is excised from the surgical field. The tissue is collected by the UNC Tissue Procurement facility and transferred to the Hingtgen lab where the skin sample is converted into fibroblast cell cultures, and converted into novel transdifferentiated neural stem cells.

IRB #: 16-1749

PI: Khagi

Approval date: 07/14/2016-2020

Enrollment: 10 patients

Status: Completed

Title: Engineering induced Neural Stem Cells from Skin Tissue of Non-Cancer Patients

Goal: Defining the size of the initial skin punch required to generate a clinical dose of iNSCs in a clinically-compatible time frame is a vital step towards defining the protocol for the generation of clinical iNSC therapies. The goal of this IRB is to allow the collection of skin punch biopsy samples of various sizes to address this question. Skin samples are collected from operating rooms at UNC Hospitals or affiliated surgery centers. This tissue would otherwise be discarded as waste after a medical procedure. The tissue is transferred to the Hingtgen lab. It is measured and weighed, then processed into iNSCs. The time required to generate 1×10^9 iNSCs (the desired clinical dose) is recorded and compared across skin samples of different sizes to define the required starting biopsy size.

IRB #: 20-2342

PI: Bae-Jump

Approval date: 09/10/2020-current

Enrollment: 30 patients

Status: Active (enrolling)

Title: MASCOT: Manufacturing and Analysis of Stem Cells from Skin Cells for Ovarian Cancer Treatment

Goal: This pre-clinical study examines the feasibility of manufacturing stem cells from skin of 30 ovarian cancer patients, and the ability of these stem cells to migrate toward an autologous tumor, *in vitro*. Skin and tumor samples will be collected from enrolled subjects at the time of standard of care debulking surgery for ovarian cancer. Two skin samples, approximately 6mm in length, will be collected from along the abdominal incision during surgery to de-bulk the ovarian tumor. These skin samples, and tumor from the same subject will be transferred to the Hingtgen lab in the University of North Carolina (UNC) Eshelman School of Pharmacy to determine the feasibility of generating patient-specific tumor-homing stem cells, as well as the anti-tumor properties and efficacy of each patient-derived line.

IRB #: 20-1878

PI: Hingtgen

Approval date: 08/31/2020-current

Enrollment: 60 patients

Status: Active (enrolling)

Title: SLICE-BMC: Surrogate Live Organ Model In Clinical Evaluation of Brain Metastases and Cancers

Goal: This pilot study aims to collect fresh primary brain tumor and fresh brain metastasis samples from adult and pediatric patients for analysis on a micro-engineered tissue platform, which uses living organ slices derived from mouse organs, called "surrogates".

TEACHING ACTIVITIES

LECTURES

Year	Course name	Course Number	Lectures Taught	Enrollment	Course type	Overall Evaluation
2021 AU	Advances in Drug Delivery	DPMP 864	2	8	Graduate	
2021 SP	Pharmaceutics & Drug Delivery Systems	PHCY 514	4	120/25	Graduate	5.00/5
2021 SP	Nanomedicine	MOPH 738	1	10	Graduate	5.00/5
2020 AU	The American Professoriate	IDST-890	1	25	Graduate	NA
2020 AU	Advances in Drug Delivery	DPMP 864	29	8	Graduate	5.00/5
2020 SP	Pharmaceutics & Drug Delivery Systems	PHCY 514	3	125/25	Professional	5.00/5
2020 SP	Nanomedicine	MOPH 738	1	10	Graduate	4.00/5
2019 AU	Advances in Drug Delivery	DPMP 864	29	10	Graduate	5.00/5
2019 SP	Pharmaceutics & Drug Delivery Systems	PHCY 514	3	125/25	Professional	5.00/5
2019 SP	Nanomedicine	MOPH 738	1	10	Graduate	5.00/5
2018 AU	Advances in Drug Delivery	DPMP 864	10	6	Graduate	4.00/5
2018 SP	Experimental Approaches to Human Disease	CBPH863	1	11	Graduate	NA
2018 SP	Pharmaceutics & Drug Delivery Systems	PHCY 512	1	125/25	Professional	4.25/5
2017 SP	Pharmaceutics II	PHCY 512	1	125/25	Professional	4.25/5
2017 SP	BioPsych: CNS	NBIO 703	1	7	Graduate	NA
2016 AU	PiPs 2	PHCY 621	7	122/25	Professional	4.67/5
2016 AU	Nanomedicine	MOPH 868	4	6	Graduate	4.00/5
2016 AU	BRIC Certificate Program	BME890-16	1	10	Graduate	NA
2016 AU	Advanced Drug Delivery Systems	BME590	1	6	Graduate	NA
2016 SP	Pharmaceutics II	PHCY 512	3	125/25	Professional	4.34/5
2016 SP	BioPsych: CNS	NBIO 703	1	7	Graduate	NA
2015 AU	Advances in Drug Delivery	MOPH 864	2	15	Graduate	3.8/5
2015 AU	Advanced Drug Delivery Systems	BME590	1	10	Graduate	NA
2014 AU	Pharmaceutics I	PHCY 410	4	161	Professional	4.17/5

Year	Course name	Course Number	Lectures Taught	Enrollment	Course type	Overall Evaluation
2014 AU	Nanomedicine	MOPH 864	5	18	Graduate	NA
2014 AU	Seminar	PHRS 899.004	14	30	Graduate	NA
2013 AU	Pharmaceutics I	PHCY 410	4	132	Professional	4.46/5
2013 AU	Nanomedicine	MOPH 864	2	18	Graduate	NA
2013 AU	Seminar	PHRS 899.004	14	30	Graduate	NA
2013 SP	Pharmaceutics of Pharmacodynamics	PHCY 412	2	174	Professional	4.27/5
2012AU	Nanomedicine	MOPH 738	2	18	Graduate	NA

ADVISING

Current Lab Members

Name	Previous Degree	Position	Year Started	Topic/Thesis	Awards
Visiting Professor					
Dennis Steindler	PhD, Neuroscience	Former Director, McKnight Brain Institute, Univ. of Florida	2020	Neuroscience, neural stem cells, brain cancer	
Research Associate					
Andrew Buckley	PhD, Molecular Biology, U. of Rochester	Research Scientist	2021	Synthetic technology	
Alain Valdivia	PharmD, MS, Pharmacology, Havana University	Research Scientist	2018	Surgery and cell therapy development	
Research Scholar					
Adebimpe Adefolaj	BS. Troy	Brain Slice Scientist	2021	Developing organotypic slice models	
Rajaneekar Dasari	Ph.D. Jawaharlal Nehru Tech. U.	Tissue Slice Scientist	2021	Advancing development of slice models	
Wendy Du	MS, NC. St.; MBA, Duke U.	Lab Manager	2018		
Post-Doctoral Fellows					
Xiaopei Xiang	PhD, Molecular Pharmaceutics, UCLA	Post Doc	2020	Organotypic brain slice models	
Graduate					
Morrent Thang	BS, Neuroscience, Indiana U	Graduate Student, Pharmaceutical Sciences	2021	Tumor-homing cell therapy	
Alex Woodell	BS, Clemson U	Graduate Student, Pharmaceutical Sciences	2018	Hybrid immune-stem cell therapies	
Lauren Kass	BS, NC St.	Graduate Student, MD-PhD Program	2021	Polymer matrices for cell therapy	

Name	Previous Degree	Position	Year Started	Topic/Thesis	Awards	
Breanna Mann	BS, Georgia Tech	Graduate Student, Pharmaceutical Sciences	2021	Pediatric cancer therapies		
Undergraduate Students						
Noah Bell			2019			
Ingrid Findlay			2019			
Michael Marand			2019		Morehead- Cain Scholar	
Former Lab Members						
Name	Previous Degree	Position	Years	Thesis Title/Topic	Awards	Current Position
Research Scientist						
Kevin Sheets	PhD, Biomedical Engineering, Virginia Tech	Research Associate (Post-doc in the Hingtgen Group from 2014-2016)	2014- 2019	Clinical scaffold development		Stride Bio
Juli Bago`	PhD, Centre d'Investigación Cardiovascular, Spain	Research Scholar (Post- doc in the Hingtgen Group from 2013-2016)	2017- 2018	Human iNSC therapy; Polymeric scaffolds for cell therapy		PI, Ostrava, Czech Republic
Post-Doctoral Fellows						
Andrew Satterlee	PhD, Molecular Pharmaceutics, UNC	Post Doc	2016- 2020	iNSC durability & slice models	TL1 Fellow	Eshelman Institute for Innovation
Vivien Lettry	PhD, Animal Surgery, Hokkaido, Japan	Post Doc	2016- 210	Patient- derived iNSC Therapies		Project Manager, NC St.
Aldofo Alfonso	PhD, National University of Córdoba, Córdoba, Argentina.	Post Doc	2012- 2014	Mouse iNSC therapy		Research Scientist, GlaxoSmithKline
Graduate						
Wulin Jiang	M.S., Biotechnology, Northwestern U.	Graduate Student, Pharmaceutical Sciences	2017	Cell therapy for metastatic disease	Venture Catalyst Fellow	L.E.K. Consulting
Alison Mercer- Smith	BS, Chemistry, Pomona College	Graduate Student, MD- PhD Program	2017- 2021	Metastatic Cancer Therapy	Dissertation award, Graduation speaker	Medical School, UNC
Hunter Bomba	BS, NC St. U	Graduate Student, Pharmaceutical Sciences	2018- 2021	Polymer matrices for NSC therapy		Virtici, LLC

Name	Previous Degree	Position	Years	Thesis Title/Topic	Awards	Current Position
Shaye Hagler	BS, Biochemistry, Florida St.	Graduate Student, Pharmaceutical Sciences	2015-2019	iNSC Therapies	GSO Representative	IsoPlexis
Onyinyechukwu Okolie	BS, Biomedical Engineering, U. of Washington	Graduate Student, Pharmaceutical Sciences	2012-2016	Mouse models of brain cancer resection		Washington St. Patrol
Clinical Fellows						
Elizabeth Finch	MD, Hematology-Oncology, UNC Hospitals	Fellow	2016	Impact of surgery on NSC transplant		Penn St. Hershey
Medical Students						
Guillame Pegna	BS, UNC	Medical Student	2013-2014	Polymeric Scaffolds		Resident; UNC Hospitals
Post-Bachelorette						
Ivory Paulk	BS, University of Central Florida	Post-bach	2016-2017	Stem cell therapies for metastatic cancer	UNC PREP Program	Graduate School; UCLA
Undergraduates						
Abby Ewend	BS, Biology, UNC	Undergraduate Scholar	2017-2021	Cancer models		Medical School, Washington U.
Spencer Maingi	BS, Chemistry, UNC	Undergraduate Researcher	201-2021	iNSC therapy		Masters Program, NC St.
Morgan Goetz	BS, BME, UNC	Undergraduate Researcher	2017-2019	Matrix development		Graduate School, Harvard U.
Becca Sikora	BS, Chemistry, UNC	Undergraduate Researcher	2012-2014	iNSC therapy		DPM, Kent State University College of Podiatric Medicine
High School Students						
Luke Garges	TBD		2016			Trinity High School
Abby Ewend	Durham Academy	Undergraduate Scholar	2017			UNC
Michael Marand	Panther Creek High School	Summer intern	2017		YIP Fellow	UNC
Other						
David Hesmer	BS, NC State	Researcher	2018-2020		Brain cancer survivor	
Sari Freedman		Pharmacy Student	2013	iNSC therapy		Resident; U. of Colorado; School of Pharmacy and Pharmaceutical Sciences
Neil Cornwell		Summer Intern	2013, 2014	Polymeric Scaffolds		BME Student; NC State
Dissertation Committees and Rotation Advisor						

Student's Name	Department	Date	Role	Current Position
Peter Voorhees	Division of Pharmacoengineering and Molecular Pharmaceutics	2021-Present	Dissertation Committee	UNC Chapel Hill
Phillip Durham	Division of Pharmacoengineering and Molecular Pharmaceutics	2021-Present	Dissertation Committee	UNC Chapel Hill
Kyle Riker	Department of Applied Physical Sciences	2021-Present	Dissertation Committee	UNC Chapel Hill
Marshall Fritz	Division of Pharmacoengineering and Molecular Pharmaceutics	2021-Present	Dissertation Committee	UNC Chapel Hill
Emily Bonacquisti	Division of Pharmacoengineering and Molecular Pharmaceutics	2021-Present	Dissertation Committee	UNC Chapel Hill
Misha Fini	Microbiology and Immunology	2020	Masters Committee	UNC Chapel Hill
Timothy Little	Division of Pharmacoengineering and Molecular Pharmaceutics	2020	Rotation Advisor	UNC Chapel Hill
Abigail Cleveland	UNC Neuroscience Center, Department of Neurology	2019-Present	Dissertation Committee	UNC Chapel Hill
Jasmine King	Department of Biomedical Engineering, Division of Pharmacoengineering and Molecular Pharmaceutics	2019-Present	Dissertation Committee	UNC Chapel Hill
Mairead Heavy	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2019	Rotation Advisor	UNC Chapel Hill
Emelia Zwyot	Chemical Biology, UNC Eshelman School of Pharmacy	2017-2021	Dissertation Committee	UNC Healthcare
Kathryn Moore	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2016-2020	Dissertation Committee	Emory U.
Randolph Qian	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2016-2020	Dissertation Committee	RegenXBio
Dean Nehama	MD-PhD Program, UNC Chapel Hill	2012-2019	Dissertation Committee	UNC Chapel Hill
Quan Jin	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2015-2019	Dissertation Committee	Biogen
Duhyeong Hwang	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2015-2020	Dissertation Committee	UNC Chapel Hill
Mengying Hu	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2016-2019	Dissertation Committee	Weill Cornell
Jing Fu	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2013-2017	Dissertation Committee	Tergus Pharma, RTP

Tojan Rahhal	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2014-2017	Dissertation Committee	Alliance Professional Development, LLC
Dongfen Yuan	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2014-2017	Dissertation Committee	Post-doctoral Fellow, UNC
Cassie Caudill	UNC Biological and Biomedical Sciences PhD Program	2014	Rotation Advisor	Vaxess
Christina Parker	UNC Biological and Biomedical Sciences PhD Program	2014-2019	Dissertation Committee	Eli Lilly
Samantha Fix	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2014	Rotation Advisor	MD Anderson
Katherine Stember	UNC Biological and Biomedical Sciences PhD Program	2015	Rotation Advisor	
Tejash Patel	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2015-2018	Dissertation Committee	RegenxBio
Karen Bulaklak	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2015-2017	Dissertation Committee	Post-doctoral Fellow; Duke University
Michael Collier	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2015-2017	Dissertation Committee	Avanti Polar Lipids, Alabama
Junghyun Kim	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2016-2017	Dissertation Committee	Post-doctoral Fellow, IBS-POSTECH, Seoul, South Korea
Nihan Chen	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2016-2019	Dissertation Committee	Pfizer
Carla Costa- Sanchez	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2016-2018	Dissertation Committee	UNC Chapel Hill
Emelia Zwyyott	UNC Biological and Biomedical Sciences PhD Program	2017	Rotation Advisor	
Randolph Qian	Molecular Pharmaceutics, UNC Eshelman School of Pharmacy	2017	Rotation Advisor	

GRANTS

ONGOING GRANT SUPPORT

TOTAL: \$12,726,280

Source of Support:	NIH/NCATS PAR-19-099: Research Project- Cooperative Agreement: Clinical and Translational Science Award, Collaborative Innovation Award (U01)
Project Number:	U01TR003715
Principal Investigators:	Hingtgen, Baldwin
Total Period of Support:	07/01/2021-06/30/2025
Total Direct Funding:	\$4,598,428

Percent Effort: 20% effort
Project Title: A consortium effort to translate therapies for neurological disease via an *ex vivo* organotypic tissue platform
Goal: This large multi-PI U01 project brings together basic science and clinical experts across UNC, Duke, and U. of Florida is to add new capabilities, discover new mechanisms of disease, and drive translation of promising new therapeutic agents towards human patients in living tissue models of brain cancer, neurodegenerative disease, and ischemic disease.

Source of Support: NIH/NINDS PA-13-302: Research Project Grant (Parent R01)
Principal Investigator: Hingtgen, Perry (Co-PI)
Total Period of Support: 02/01/2022-01/31/2027
Total Direct Funding: \$2,258,826
Percent Effort: 20% effort
Project Title: Harnessing Continuous Liquid Interface 3D Printing to Improve Tumor-homing Stem Cell Therapy for Post-surgical Brain Cancer
Goal: This R01 is focused on utilizing additive manufacturing technology to generate new matrices that maximize the efficacy of stem cell therapy for post-surgical glioblastoma.

Source of Support: NIH/NINDS PA-13-302: Research Project Grant (Parent R01)
Project Number: R01NS097507
Principal Investigator: Hingtgen
Total Period of Support: 06/01/2016-05/30/2022
Total Direct Funding: \$1,750,904
Percent Effort: 21.9% effort
Project Title: Nanofiber matrices to improve neural stem cell-mediated cancer therapy
Goal: This R01 is focused on developing and testing a panel of novel nanofiber matrices in order to define the design parameters required to maximize the efficacy of stem cell therapy for post-surgical glioblastoma.

Source of Support: NIH/NINDS PA-13-302: Research Project Grant (Parent R01)
Project Number: R01NS099368
Principal Investigator: Hingtgen
Total Direct Funding: \$1,903,983
Total Period of Support: 11/01/2017-10/31/2022
Percent Effort: 25% effort
Project Title: Engineering stem cell therapies to understand and overcome glioblastoma adaption
Goal: To define mechanisms underlying escape of GBM from NSC therapy and devise strategies to achieve durable suppression of post-operative disease.

Source of Support: NIH/NCATS PA-15-270, Omnibus Solicitation of the NIH for Small Business Technology Transfer Grant Applications (Parent STTR [R42])
Project Number: 2 R42TR001789-02A1
Principal Investigator: Nichols
Role: Co-PI
Total Direct Funding: \$1,499,150
Total Period of Support: 02/01/2019-01/31/2022
Percent Effort: 10% effort
Project Title: Personalized stem cell therapy for cancer
Goal: This small business grant is focused on exploring multiple aspects of developing a clinical version of the iNSC therapy for human patient testing.

Source of Support: Eshelman Institute for Innovation
Principal Investigator: Hingtgen
Total Direct Funding: \$500,000

Total Period of Support: 06/01/2019-05/30/2022
Percent Effort: 10% effort
Project Title: Harnessing synthetic biology to develop next-generation cell therapies
Goal: Through a new partnership with the J. Craig Venter Institute, blend the latest in synthetic biology with emerging cell therapy techniques to create a new class of anti-cancer cell therapies.

Source of Support: Accelerate Brain Cancer Cure
Principal Investigator: Hingtgen
Total Direct Funding: \$169,000
Total Period of Support: 03/01/2019-02/28/2022
Percent Effort: 10% effort
Project Title: Developing cellular hybrids to treat glioblastoma
Goal: Create a new approach to cell-based immune therapy

Source of Support: NIH/NCI PA-18-668 Pre-Doctoral Dual-Degree Training Program (F30)
Principal Investigator: Mercer-Smith
Total Direct Funding: \$80,000
Total Period of Support: 07/11/2019-07/10/2023
Percent Effort: 5% effort
Project Title: Therapeutic Engineered Stem Cells as a New Adjuvant Therapy for Non-small Cell Lung Cancer Brain Metastases
Goal: This F30 training grant is designed to create a new-based approach to treating lung cancer brain metastases

Source of Support: Eshelman Institute for Innovation
Principal Investigator: Hingtgen, Freeman
Total Direct Funding: \$150,000
Total Period of Support: 06/01/2020-01/30/2022
Percent Effort: 10% effort
Project Title: UberCell Therapy
Goal: Create a new hybrid peptide-cell therapy for treating cancer

Source of Support: Extrude Pharmaceuticals
Project Number: Contract
Principal Investigator: Hingtgen
Total Direct Funding: \$149,550
Total Period of Support: 07/01/2021-06/30/2022
Percent Effort: 2% effort
Project Title: Testing controlled released systems for brain cancer
Goal: To test novel polymer-based drug delivery systems in resection models of GBM

Source of Support: NIH/NINDS PA-20-185: Research Project Grant (Parent R01)
Project Number: R01CA257009
Principal Investigator: K Ainslie
Total Direct Funding: \$1,925,265
Total Period of Support: 07/01/2021-06/30/2026
Percent Effort: 5% effort
Project Title: Tunable Temporal Drug Release for Optimized Synergistic Combination Therapy of Glioblastoma
Goal: To create polymer scaffolds as local controlled release drug delivery platforms for tuned drug release within the surgical cavity of GBM
Role: Co-I

GRANT PROPOSALS PENDING

Source of Support: National Institute of Health

Principal Investigator: Benner
Role: Co-PI
Total Direct Funding: \$1,900,000
Percent Effort: 10% effort
Project Title: Translating Nanostructures from Synthetic Biology for Cancer Prevention
Review date: Fall 2021

Source of Support: National Institute of Health
Principal Investigator: Hingtgen
Role: PI
Total Direct Funding: \$1,500,000
Percent Effort: 20% effort
Project Title: Understanding and overcoming breast cancer resistance to systemic tumor-homing stem cell therapy
Review date: Fall 2021

Source of Support: National Institute of Health
Principal Investigator: Glass
Role: co-PI
Total Direct Funding: \$1,500,000
Percent Effort: 5% effort
Project Title: Developing the Next Generation of Large Mammalian Vectors to Optimize Cell Therapy for Cancer
Review date: Spring 2022

COMPLETED GRANT SUPPORT

TOTAL: \$5,676,500

Source of Support: Eshelman Institute for Innovation
Principal Investigator: Hingtgen
Total Direct Funding: \$200,000
Total Period of Support: 06/01/2018-05/30/2021
Percent Effort: 10% effort
Project Title: Native and Bioprinted 3D Tissue Array Platform for Predicting Cancer Metastasis and Drug Response

Goal: To create a novel tissue-slice based screening platform to predict the drug response of metastatic cancer.

Source of Support: UNC Eshelman Institute for Innovation
Principal Investigator: Hingtgen
Role: PI
Total Direct Funding: \$200,000
Total Period of Support: 06/01/2016-12/31/2020
Percent Effort: 5% effort
Project Title: Systemic Stem Cell Therapy for Multi-organ Metastatic Breast Cancer
Goal: To create the first systemically delivered tumor-homing stem cell therapy to target metastatic breast cancer distributed throughout multiple organs of the body.

Source of Support: Eshelman Institute for Innovation
Principal Investigator: Hingtgen
Total Direct Funding: \$200,000
Total Period of Support: 06/01/2017-05/30/2021
Percent Effort: 10% effort
Project Title: Personalized therapy for the incurable: metastatic lung cancer
Goal: To create a novel cell-based therapy for metastatic lung cancer.

Source of Support: Ian's Friends Foundation
Principal Investigator: Hingtgen, Floyd
Total Direct Funding: \$192,000
Total Period of Support: 12/01/2019-08/30/2021
Percent Effort: 10% effort
Project Title: Creating a novel tissue-based platform to rapidly elucidate therapeutic vulnerabilities of pediatric brain cancer

Goal: Create a new approach to profile and treat pediatric brain cancers using a tissue-based platform

Source of Support: UNC Eshelman Institute for Innovation
Principal Investigator: Hingtgen
Role: PI
Total Direct Funding: \$750,000
Total Period of Support: 11/01/2015-12/01/2020
Percent Effort: 15% effort
Project Title: Transdifferentiation: A novel approach to personalized cancer therapy
Goal: To advance iNSC therapy for GBM towards human patient testing by developing multiple strategies for iNSC generation, therapy, and characterization that will enable use in the clinical setting.

Source of Support: North Carolina State University
Principal Investigator: Pourdeyhi
Role: Co-PI
Total Direct Funding: \$750,000 (\$110,000 to our sub-project)
Total Period of Support: 02/01/2017-12/31/2019
Percent Effort: 10% effort
Project Title: Game-changing Research Incentive Program: 3D Printing of Fibrous Tissue Engineered Medical Products

Goal: To engineer a novel 3D printing nonwoven scaffold fabrication system and demonstrate the versatility and utility in different exemplars of regenerative medicine and cancer therapy.

Source of Support: UNC Eshelman Institute for Innovation
Principal Investigator: Lawrence
Total Direct Funding: \$750,000 (\$300,000 to our project)
Total Period of Support: 11/01/2015-06/01/2019
Percent Effort: 10% effort
Project Title: Light-Triggered Cell-Mediated Targeting of Glioblastoma
Goal: To create a new approach to cancer therapy where small molecule drugs are released from stem cell drug carriers using light activation.

Source of Support: NIH/NCATS PA-15-270, Omnibus Solicitation of the NIH for Small Business Technology Transfer Grant Applications (Parent STTR [R41])
Principal Investigator: Nichols
Total Direct Funding: \$250,000 (\$106,417 to our lab)
Total Period of Support: 06/15/2017-06/14/2019
Percent Effort: 10% effort
Project Title: Personalized Neural Stem Cell Therapy for Cancer
Goal: This small business grant is focused on exploring multiple aspects of developing a clinical version of the iNSC therapy for human patient testing.

Source of Support: University of Birmingham, United Kingdom
Principal Investigator: McConville
Total Direct Funding: \$15,000 (\$12,000 to our sub-project)
Total Period of Support: 06/01/2017-05/30/2018

Percent Effort: 3% effort
Project Title: Development of irinotecan-loaded PLGA millirods for the treatment of glioblastoma

Goal: Our portion of the project will focus on testing drug-eluting nanorods in mouse models of GBM resection/recurrence.

Source of Support: North Carolina General Assembly
Principal Investigator: Jay, Ligler
Role: Co-PI
Total Direct Funding: \$1,830,00 (\$225,000 to our sub-project)
Total Period of Support: 06/01/2015-06/01/2018
Percent Effort: 10% effort
Project Title: Program in PharmacoEngineering: Integrating Engineering with Pharmaceutical Sciences to Improve the Delivery of Therapeutic and Diagnostic Agents.

Goal: To develop heterogeneous scaffolding materials designed to optimize the retention, persistence, and migration of tumoricidal neural stem cells transplanted into the GBM resection cavity.

Source of Support: UNC Eshelman Institute for Innovation
Principal Investigator: Hingtgen
Role: PI
Total Direct Funding: \$50,000
Total Period of Support: 11/01/2015-06/01/2017
Percent Effort: 5% effort
Project Title: Developing cytotoxic stem cell therapy for pediatric brain cancer
The goal of this project is to create new tumoricidal stem cell treatments that effectively treat various forms of pediatric brain cancer and can be easily translated into the clinical setting.

Source of Support: North Carolina General Assembly-Supplement
Principal Investigator: Jay, Ligler
Role: Co-PI
Total Direct Funding: \$35,000
Total Period of Support: 06/01/2015-06/01/2016
Percent Effort: 10% effort
Project Title: Enhancing neural stem cell tumor-homing migration using novel single-cell genetics

The goal of this project is to perform single-cell genetic analysis to identify pathways mediating migration in neural stem cells and convert this information into more effective treatments.

Source of Support: NIH/NCATS KL2TR000084
Principal Investigator: Runge
Role: Scholar
Total Direct Funding: \$75,000 (an additional \$258,000 provided 75% salary coverage for 3 years)
Total Period of Support: 11/1/2013-4/30-2018
Percent Effort: 75% effort and 75% salary support
Project Title: UNC Clinical Translational Science Award-K12 Scholars Program (KL2)
The overall goal of this application is to combine the research strengths, resources and opportunities at UNC and new partner, RTI International, to build on the foundation established in the CTSA's last five years. On this project, I was a Scholar.

Source of Support: UNC Lineberger Comprehensive Cancer Center
Principal Investigator: Hingtgen
Role: PI
Total Direct Funding: \$100,000
Total Period of Support: 01/01/2013-01/31/2015

Percent Effort: 20% effort
Project Title: Transdifferentiated Neural Stem Cells: A Novel Approach for Cancer Therapy
The goal of this small research grant is to support develop induced neural stem cell carriers for cancer therapy.

Source of Support: UNC IBM Junior Faculty Development Award
Principal Investigator: Hingtgen
Role: PI
Total Direct Funding: \$7,500
Total Period of Support: 01/01/2014-12/31/2014
Percent Effort: 10% effort
Project Title: Developing Personalized Cell-based Therapies for Cancer Using Patient Biopsies
The goal of this small research grant is to support develop induced neural stem cell carriers from the skin of brain cancer patients.

Source of Support: UNC University Research Council Award
Principal Investigator: Hingtgen
Role: PI
Total Direct Funding: \$5,000
Total Period of Support: 01/01/2013-11/30/2015
Percent Effort: 10% effort
Project Title: Generation of Novel Patient-specific Induced Neural Stem Cell Carriers for Cancer Therapy.
The goal of this small research grant is to cover the expense of deriving and culturing induced neural stem cell carriers generated from the skin of brain cancer patients.

Source of Support: UNC Translational and Clinical Sciences Institute
Principal Investigator: Hingtgen
Role: PI
Total Direct Funding: \$50,000
Total Period of Support: 11/01/2014-10/31/2015
Percent Effort: 10% effort
Project Title: Neural Stem Cell Mediated Brain Tumor Therapy: Increased Efficacy with Electrospun Scaffolds
The goal of this project is to develop a new scaffold-based system for transplanting tumoricidal stem cells for cancer therapy.

Source of Support: NIH/NCATS 2KR461203
Principal Investigator: Hingtgen
Role: PI
Total Direct Funding: \$2,000
Total Period of Support: 06/01/2013-05/01/2013
Percent Effort: 2% effort
Project Title: Developing translatable personalized cell therapies for glioblastoma
The goal of this small research grant is to support the conversion of patient-derived skin biopsy samples into fibroblasts. These cells will then be used to explore the first induced neural stem cells created from the skin of cancer patients.

Source of Support: NIH T32 CA079443
Principal Investigator: Weissleder
Role: Post-doctoral Fellow
Total Direct Funding: \$115,000
Total Period of Support: 02/2005-06/2008
Percent Effort: 100% effort and salary
Project Title: Training Grant in Molecular Imaging Research

Source of Support: American Brain Tumor Association
Principal Investigator: Hingtgen
Role: Post-doctoral Fellow
Total Direct Funding: \$100,000
Total Period of Support: 07/2008-07/2010
Percent Effort: 75% effort and salary
Project Title: Developing stem cells delivery of the targeted immunotoxin IL13-PE for treatment of Glioblastoma.

PROFESSIONAL SERVICE

SERVICE TO THE DISCIPLINE (NATIONAL/INTERNATIONAL)

Professional Organizations

2012-present Society for Neuro-oncology
2012-present American Society of Gene and Cell Therapy

Editorial Board Member

2017 *Biomaterials*, International Editorial Board Member

Ad hoc Scientific Manuscript Reviewer for:

- 1) *Science Translational Medicine*
- 2) *ACS Nano*
- 3) *Stem Cells Translational Medicine*
- 4) *Biomaterials*
- 5) *Cancer Letters*
- 6) *Journal of Neuro-oncology*
- 7) *Neuro-oncology*
- 8) *Methods*
- 9) *Chemical Engineering Journal*
- 10) *Science Advances*
- 11) *Nature Biomedical Engineering*

Reviewer Activities:

2021 Florida Center for Brain Tumor Research
2021 Lineberger Comprehensive Cancer Center, UCFR Award Committee
2019 NIH Nano Study Section Ad Hoc
2017 NIH Nano Study Section Ad Hoc
2016 Society of Neuro-oncology, Young Investigator Award
2015 Society of Neuro-oncology, Young Investigator Award
2015 Lineberger Comprehensive Cancer Center, UCFR Award Committee
2014 Lineberger Comprehensive Cancer Center, UCFR Award Committee

SERVICE TO COMPANIES:

2015- present Co-founder, BOD, SAB, Falcon Therapeutics

UNIVERSITY SERVICE:

Departmental/Division:

2021 Eshelman Institute for Innovation Opportunistic Proposals, Reviewer
2021 IPhO panel discussion
2021 DPMP Recruitment Webinar
2020-present ESOP Budget Committee
2020-present Industry Pharmacists Organization (IPhO) faculty representative

2020	DPMP Recruitment Webinar
2020	ESOP Capital Working Group
2020	Focus group for FDA's biosimilar curriculum landscape assessment
2018-present	DPMP Faculty Search Committee
2018	Executive Vice Dean Search Committee
2017	Eshelman Institute for Innovation Symposium planning committee
2017	Graduate Curriculum Planning Committee
2016	EII Associate Director Search Committee Member
2016	Curricular Transformation Committee: Research/Scholarship Planning Team
2016	Curricular Transformation Committee: Student Practicum Planning Committee
2016	Graduate School self-study committee
2013-2020	DPMP Representative, Facilities Advisory Committee
2012	Research Assistant Professor Search Committee, Chair Division of Molecular Pharmaceutics

Institutional/UNC Campus:

2021	Member, Senior Director of Development Search Committee
2020-2021	Member, Lineberger Cancer Center Team Science Working Group
2019-present	Member, UNC Biosafety Committee
2017	Campaign Faculty Ambassador, UNC Campaign for Carolina
2016-present	Member, UNC Animal Studies Core Advisory Panel
2016-present	Member, UNC Small Animal Imaging Core Advisory Panel
2015	Candidate interviewer for MD-PhD and BBSP program
2014	NanoDDS Conference, session chair
2014	Candidate interviewer for MD-PhD and BBSP program
2012-2014	Biomedical Research Imaging Center Retreat planning committee, member

Public:

2019, 2020	Created a unique research opportunity for David Hesmer, an active brain cancer patient, within our research team. This partnership was featured in a press release from the Lineberger Comprehensive Cancer Center " <i>Grateful patient works with lab team to find cancer therapies</i> ".
2019	Organized a story on two cancer survivors working in our research team. Together with the UNC Development Office, "Minds meet hearts in the hunt for a cure" featured the stories of Dr. Andrew Satterlee and Alison Mercer-Smith who both survived cancer and are now working with us to create better treatment options.
2017-present	Participated in the <i>Head for the Cure</i> event to raise funding and awareness for brain cancer. Our research group participated in the race and attended the post-race event where we talked with fellow researchers, clinicians, and cancer survivors
2017	Organized <i>Trinity Winter Term: Day in the life of a scientist</i> . This program enabled high school students to gain exposure to careers in science. Over the course of two weeks, 12 students from Trinity High School met with 15 faculty members from the schools of Pharmacy and Medicine in 1 hour blocks. This provided the students with exposure and insights into careers as researchers, administrators, and leaders in the sciences.
2016, 2017	Participated in the Young Innovators Program (YIP) to provide bright and eager high school students with early immersive experiences in laboratory research.
2016	Participated in the Postbaccalaureate Research Education Program (PREP), where we train students with a Bachelor's degree to strengthen skills with the goal of enabling entry into PhD programs across the nation.
2016	Led a tour of research labs and the imaging center for the UNC Pediatric Cancer Survivor's Teen Support Group and their families.

2016

Volunteered at the SECU Family House. Our research group bought food, supplies, and cooked dinner for the guests whose families or loved ones are being treated at UNCHospitals.

UNIVERSITY AFFILIATIONS:

- 02/2014-present **Member**, 4D Initiative, UNC Translational and Clinical Sciences Institute, UNC
- 11/2013-present **Member**, Neuroscience Center; UNC
- 12/2012-present **Member**, Center for Nanotechnology and Drug Delivery; UNC
- 10/2012-present **Associate Member**, Lineberger Comprehensive Cancer Center; UNC
- 04/2012-present **Member**, Biomedical Research Imaging Center, UNC