

Stanford



Jeanne Shen

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CLINICAL OFFICE (PRIMARY)

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ACADEMIC CONTACT INFORMATION

- **Alternate Contact**

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Bio

CLINICAL FOCUS

- Anatomic and Clinical Pathology
- Gastrointestinal and Hepatic Pathology
- Pancreatobiliary Pathology
- Artificial Intelligence
- Digital and Computational Pathology

ACADEMIC APPOINTMENTS

- Associate Professor - University Medical Line, Pathology
- Member, Bio-X
- Member, Stanford Cancer Institute

HONORS AND AWARDS

- Biodesign Faculty Fellowship, Stanford Byers Center for Biodesign (2019)
- Cancer Innovation Award, Stanford Cancer Institute (2019)
- Pathology in Precision Health Research Award, Stanford University Department of Pathology (2017)
- Best Abstract Award Runner-up, Rodger C. Haggitt GI Pathology Society (2013)
- Joseph J. and Ernesta G. Mira Scholarship, Washington University, School of Medicine (2009)
- George F. Gill Scholarship, Washington University, School of Medicine (2009)
- E.A. Marquard Memorial Student Scholarship, Washington University, School of Medicine (2008)
- Dr. Larry T. Chiang Scholarship, Washington University, School of Medicine (2006)
- President's Scholar Award, Stanford University (2001)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- NCCN Clinical Practice Guidelines in Oncology, Ampullary Adenocarcinoma Panel Member, National Comprehensive Cancer Network (NCCN) (2021 - present)
- Associate Director (Pathology), Center for Artificial Intelligence in Medical Imaging (AIMI), Stanford University (2020 - present)
- ECOG-ACRIN Laboratory Science & Pathology Review Committee Member, Eastern Cooperative Oncology Group-American College of Radiology Imaging Network (ECOG-ACRIN) (2020 - present)
- NCCN Clinical Practice Guidelines in Oncology, Pancreatic Adenocarcinoma Panel Member, National Comprehensive Cancer Network (NCCN) (2020 - present)
- Abstract Review Committee Member, Gastrointestinal Pathology, United States and Canadian Academy of Pathology (USCAP) (2017 - present)
- Member, Executive Committee, Center for Artificial Intelligence in Medical Imaging (AIMI), Stanford University (2017 - present)
- Member, College of American Pathologists (2012 - present)
- Member, United States and Canadian Academy of Pathology (USCAP) (2011 - present)

PROFESSIONAL EDUCATION

- Fellowship, Brigham and Women's Hospital, Harvard Medical School , Gastrointestinal and Hepatopancreatobiliary Pathology (2015)
- Board Certification: Anatomic and Clinical Pathology, American Board of Pathology (2014)
- Residency, Brigham and Women's Hospital, Harvard Medical School , Anatomic and Clinical Pathology (2014)
- MD, Washington University in St. Louis , Doctor of Medicine (2010)
- BS, Stanford University , Biological Sciences (2005)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Gastrointestinal and pancreatobiliary pathology, with major emphasis on GI and pancreatic neoplasia, inflammatory bowel disease, biodesign innovation, and the application of machine learning to digital pathology.

Publications

PUBLICATIONS

- **Computational pathology in 2030: a Delphi study forecasting the role of AI in pathology within the next decade.** *EBioMedicine*
Berbís, M. A., McClintock, D. S., Bychkov, A., Van der Laak, J., Pantanowitz, L., Lennerz, J. K., Cheng, J. Y., Delahunt, B., Egevad, L., Eloy, C., Farris, A. B., Fraggetta, F., García Del Moral, et al
2023; 88: 104427
- **The inflamed immune phenotype (IIP): A clinically actionable artificial intelligence (AI)-based biomarker predictive of immune checkpoint inhibitor (ICI) outcomes across > 16 primary tumor types**
Shen, J., Choi, Y., Lee, T., Kim, H., Chae, Y., Dulken, B., Bogdan, S., Huang, M., Fisher, G. A., Park, S., Lee, S., Hwang, J., Chung, et al
LIPPINCOTT WILLIAMS & WILKINS.2022
- **Deep learning predicts postsurgical recurrence of hepatocellular carcinoma from digital histopathologic images.** *Scientific reports*
Yamashita, R. n., Long, J. n., Saleem, A. n., Rubin, D. L., Shen, J. n.
2021; 11 (1): 2047
- **Artificial intelligence-powered spatial analysis of tumor-infiltrating lymphocytes predicts survival after immune checkpoint inhibitor therapy across multiple cancer types.** *Journal of Clinical Oncology*
Shen, J., Lee, T., Hwang, J., Choi, Y., Lee, S., Kim, H., Chung, J., Bogdan, S., Huang, M., Raclin, T., Fisher, G. A., Pereira, S., Park, et al
2021; 39
- **Learning domain-agnostic visual representation for computational pathology using medically-irrelevant style transfer augmentation** *IEEE Transactions on Medical Imaging*
Yamashita, R., Long, J., Banda, S., Shen*, J., Rubin*, D. L., (*equal contribution)
2021: 3945-3954

- **Deep learning for the prediction of microsatellite instability in colorectal cancer: a diagnostic study** *The Lancet Oncology*
Yamashita, R., Long, J., Longacre, T., Peng, L., Berry, G. J., Martin, B., Higgins, J. P., Rubin, D. L., Shen, J.
2021; 22 (1): 132-141
- **Deep learning assistance for the histopathologic diagnosis of *Helicobacter pylori*** *Intelligence-Based Medicine*
Zhou, S., Marklund, H., Blaha, O., Desai, M., Martin, B., Bingham, D., Berry, G. J., Gomulia, E., Ng, A. Y., Shen, J.
2020
- **Impact of a deep learning assistant on the histopathologic classification of liver cancer.** *NPJ digital medicine*
Kiani, A. n., Uyumazturk, B. n., Rajpurkar, P. n., Wang, A. n., Gao, R. n., Jones, E. n., Yu, Y. n., Langlotz, C. P., Ball, R. L., Montine, T. J., Martin, B. A., Berry, G. J., Ozawa, et al
2020; 3: 23
- **Changes in the dielectric spectra of murine colon during neoplastic progression** *Biomedical Physics & Engineering Express*
Sabuncu*, A. C., Shen*, J., Zaki, M., Beskok, A., (*equal contribution)
2018; 4 (3): 035003
- **Deep learning-based phenotyping reclassifies combined hepatocellular-cholangiocarcinoma.** *Nature communications*
Calderaro, J., Ghaffari Laleh, N., Zeng, Q., Maille, P., Favre, L., Pujals, A., Klein, C., Bazille, C., Heij, L. R., Uguen, A., Luedde, T., Di Tommaso, L., Beaufrère, et al
2023; 14 (1): 8290
- **The polyclonal path to malignant transformation in familial adenomatous polyposis**
Schenck, R. O., Khan, A., Horning, A., Esplin, E. D., Monte, E., Wu, S., Hanson, C., Bararpour, N., Neves, S., Jiang, L., Contrepolis, K., Lee, H., Guha, et al
AMER ASSOC CANCER RESEARCH.2023
- **Development and Validation of a Machine Learning Model for Detection and Classification of Tertiary Lymphoid Structures in Gastrointestinal Cancers.** *JAMA network open*
Li, Z., Jiang, Y., Li, B., Han, Z., Shen, J., Xia, Y., Li, R.
2023; 6 (1): e2252553
- **Relationship between tumor microenvironment (TME)-based histomic TGF# signature (TGFBS), stromal fibroblast recruitment, and exclusion of immune cells as immunotherapy resistance mechanisms** *Journal of Clinical Oncology*
Park, G., Park, J., Shen, J., Choi, Y., Lee, T., Kim, H., Chae, Y., Lee, S., Park, S., Chung, J., Oum, C., Ma, M., Seo, et al
2023; 41 (16)
- **PlexusNet: A Neural Network Architectural Concept for Medical Image Classification** *Computers in Biology and Medicine*
Eminaga, O., Abbas, M., Shen, J., Laurie, M., Brooks, J. D., Liao, J., Rubin, D. L.
2023
- **RNA-to-image multi-cancer synthesis using cascaded diffusion models** *bioRxiv*
Carrillo-Perez, F., Pizurica, M., Zheng, Y., Shen, J., Gevaert, O.
2023
- **Subcutaneous Sweet Syndrome Successfully Treated With Ustekinumab in a Patient With Ulcerative Colitis.** *ACG case reports journal*
Hu, K. A., Shen, J., Rieger, K., Wei, M. T., Gubatan, J.
2022; 9 (11): e00881
- **Nestin as a diagnostic and prognostic marker for combined hepatocellular-cholangiocarcinoma.** *Journal of hepatology*
Calderaro, J., Di Tommaso, L., Maille, P., Beaufrere, A., Nguyen, C. T., Heij, L., Gnemmi, V., Graham, R. P., Charlotte, F., Chartier, S., Wendum, D., Vij, M., Allende, et al
2022
- **Rapid Deployment of Whole Slide Imaging for Primary Diagnosis in Surgical Pathology at Stanford Medicine.** *Archives of pathology & laboratory medicine*
Rojansky, R., Jhun, I., Dussaq, A. M., Chirieleison, S. M., Nirschl, J. J., Born, D., Fralick, J., Hetherington, W., Kerr, A. M., Lavezo, J., Lawrence, D. B., Lummus, S., Macasaet, et al
2022
- **AI-enabled in silico immunohistochemical characterization for Alzheimer's disease.** *Cell reports methods*
He, B., Bukhari, S., Fox, E., Abid, A., Shen, J., Kawas, C., Corrada, M., Montine, T., Zou, J.

2022; 2 (4): 100191

- **MITI minimum information guidelines for highly multiplexed tissue images.** *Nature methods*
Schapiro, D., Yapp, C., Sokolov, A., Reynolds, S. M., Chen, Y., Sudar, D., Xie, Y., Muhlich, J., Arias-Camison, R., Arena, S., Taylor, A. J., Nikolov, M., Tyler, et al
2022; 19 (3): 262-267
- **Ampullary Adenocarcinoma, Version 1.2022** *NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)*
Tempero, M. A., Malafa, M. P., Behrman, S. W., Chiorean, G. E., Al-Hawary, M., Benson, A. B., Cardin, D. B., Chung, V., Czito, B., Del Chiaro, M., Dillhoff, M., Donahue, T. R., Dotan, et al
2022
- **Synthetic whole-slide image tile generation with gene expression profiles infused deep generative models** *bioRxiv*
Carrillo-Perez, F., Pizurica, M., Ozawa, M. G., Vogel, H., West, R. B., Kong, C. S., Herrera, L. J., Shen, J., Gevaert, O.
2022
- **Deep Learning-Based Sparse Whole-Slide Image Analysis for the Diagnosis of Gastric Intestinal Metaplasia** *arXiv*
Braatz, J., Rajpurkar, P., Zhang, S., Ng, A. Y., Shen, J.
2022
- **A spatial map of human macrophage niches links tissue location with function in colon and breast cancer** *bioRxiv*
Matusiak, M., Hickey, J., Luca, B., Lu, G., Kidziński, L., Szu, S., Colburg, D. R., Phillips, D., Charville, G., Shen, J., Nolan, G. P., Newman, A., West, et al
2022
- **Global loss of fine-scale chromatin architecture and rebalancing of gene expression during early colorectal cancer development** *bioRxiv*
Zhu, Y., Lee, H., Weimer, A. K., Horning, A., Nevins, S. A., Esplin, E. D., Paul, K., Krieger, G., Shipony, Z., Mills, M., Laquindanum, R., Ladabaum, U., Chiu, et al
2022
- **Stomach** *Mills and Sternberg's Diagnostic Surgical Pathology, 7th Edition*
Longacre, T., Shen, J.
Wolters Kluwer.2022; 7: 1576-1624
- **Single-cell analyses define a continuum of cell state and composition changes in the malignant transformation of polyps to colorectal cancer** *Nature Genetics*
Becker, W. R., Nevins, S. A., Chen, D. C., Chiu, R., Horning, A., Laquindanum, R., Mills, M., Chaib, H., Ladabaum, U., Longacre, T., Shen, J., Esplin, E. D., Kundaje, et al
2022; 54: 985-995
- **Distinct cell states define the developmental trajectories of mucinous appendiceal neoplasms towards pseudomyxoma metastases** *bioRxiv*
Ayala, C., Sathe, A., Bai, X., Grimes, S. M., Shen, J., Poultsides, G. A., Lee, B., Ji, H. P.
2022
- **Pancreatic Adenocarcinoma, Version 2.2021** *JOURNAL OF THE NATIONAL COMPREHENSIVE CANCER NETWORK*
Tempero, M. A., Malafa, M. P., Al-Hawary, M., Behrman, S. W., Benson, A. B., Cardin, D. B., Chiorean, E., Chung, V., Czito, B., Del Chiaro, M., Dillhoff, M., Donahue, T. R., Dotan, et al
2021; 19 (4): 439-457
- **Learning domain-agnostic visual representation for computational pathology using medically-irrelevant style transfer augmentation** *Arxiv*
Yamashita, R., Long, J., Banda, S., Shen, J., Rubin, D. L.
2021
- **Single-cell analyses reveal a continuum of cell state and composition changes in the malignant transformation of polyps to colorectal cancer** *bioRxiv*
Becker, W. R., Nevins, S. A., Chen, D. C., Chiu, R., Horning, A., Laquindanum, R., Mills, M., Chaib, H., Ladabaum, U., Longacre, T., Shen, J., Esplin, E. D., Kundaje, et al
2021
- **Multi-omic Analysis of Familial Adenomatous Polyposis Reveals Molecular Pathways and Polyclonal Spreading Associated with Early Tumorigenesis** *19 May 2021, PREPRINT (Version 1) available at Research Square*
Horning, A. M., Esplin, E. D., Wu, S., Hanson, C., Bararpour, N., Nevins, S. A., Jiang, L., Contrepois, K., Lee, H., Guha, T. K., Hu, Z., Laquindanum, R., Mills, et al

2021

- **Pepsinogens and Gastrin Demonstrate Low Discrimination for Gastric Precancerous Lesions in a Multi-Ethnic United States Cohort.** *Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association*

Huang, R. n., Park, S. n., Shen, J. n., Longacre, T. n., Ji, H. n., Hwang, J. H.

2021

- **Development and Use of Natural Language Processing for Identification of Distant Cancer Recurrence and Sites of Distant Recurrence Using Unstructured Electronic Health Record Data.** *JCO clinical cancer informatics*

Karimi, Y. H., Blayney, D. W., Kurian, A. W., Shen, J. n., Yamashita, R. n., Rubin, D. n., Banerjee, I. n.

2021; 5: 469–78

- **In the Thick of It: The Many Faces of Collagenous Gastritis.** *Digestive diseases and sciences*

Singh, S., Jing, E., Shen, J.

2020

- **Enteric Glia Play a Critical Role in Promoting the Development of Colorectal Cancer** *Frontiers in Oncology*

Yuan, R., Bhattacharya, N., Kenkel, J. A., Shen, J., DiMaio, M. A., Bagchi, S., Prestwood, T. R., Habtezion, A., Engleman, E. G.

2020; 10: 595892

- **A case-control study of risk factors for advanced gastric intestinal metaplasia in a multiethnic United States population (The Stanford GAPS Study)** *Cancer Epidemiology, Biomarkers & Prevention*

Huang, R. J., Park, S., Chitre, T., Shen, J., Longacre, T., Hwang, J.

2020

- **Hispanic/Latino gastric adenocarcinoma patients have distinct molecular profiles including a high rate of germline CDH1 mutations** *Cancer Res, 2020 Apr 8. pii: canres.2918.2019 [Epub ahead of print]*

Wang, S. C., Yeu, Y., Hammer, S. T., Xiao, S., Zhu, M., Hong, C., Yoon, L. Y., Nassour, I., Shen, J., Agarwal, D., Reznik, . I., Mansour, J. C., Yopp, et al

2020

- **Deep learning predicts post-surgical recurrence of hepatocellular carcinoma from digital whole-slide images** *MedRxiv*

Yamashita, R., Long, J., Saleem, A., Rubin, D. L., Shen, J.

2020

- **Deep learning-based Helicobacter pylori detection: A diagnostic pathology study** *MedRxiv*

Zhou, S., Marklund, H., Blaha, O., Desai, M., Martin, B., Bingham, D., Berry, G. J., Gomulia, E., Ng, A. Y., Shen, J.

2020

- **Plexus Convolutional Neural Network (PlexusNet): A novel neural network architecture for histologic image analysis** *ArXiv*

Eminaga, O., Abbas, M., Kunder, C., , Loening, A. M., Shen, J., Brooks, J. D., Langlotz, C. P., Rubin, D. L.

2019

- **Deep Learning for the Digital Pathologic Diagnosis of Cholangiocarcinoma and Hepatocellular Carcinoma: Evaluating the Impact of a Web-based Diagnostic Assistant** *2019 Conference on Neural Information Processing Systems (NeurIPS), Machine Learning for Health (ML4H)*

Uyumazturk, B., Kiani, A., Rajpurkar, P., Wang, A., Ball, R. L., Gao, R., Yu, Y., Jones, E., Langlotz, C. P., Martin, B., Berry, G. J., Ozawa, M. G., Hazard, et al

2019

- **SWI/SNF component ARID1A restrains pancreatic neoplasia formation.** *Gut*

Wang, S. C., Nassour, I., Xiao, S., Zhang, S., Luo, X., Lee, J., Li, L., Sun, X., Nguyen, L. H., Chuang, J., Peng, L., Daigle, S., Shen, et al

2018

- **Continuity of transcriptomes among colorectal cancer subtypes based on meta-analysis** *GENOME BIOLOGY*

Ma, S., Ogino, S., Parsana, P., Nishihara, R., Qian, Z., Shen, J., Mima, K., Masugi, Y., Cao, Y., Nowak, J. A., Shima, K., Hoshida, Y., Giovannucci, et al

2018; 19: 142

- **Clinicopathological characteristics of invasive gastric Helicobacter pylori** *HUMAN PATHOLOGY*

Dudley, J., Wiczorek, T., Selig, M., Cheung, H., Shen, J., Odze, R., Deshpande, V., Zukerberg, L.

2017; 61: 19-25

- **Using NSG recipient mice improves engraftment of gastric cancer patient derived xenografts.**

Wang, S. C., Zhu, M., Nassour, I., Shen, J., Mansour, J. C., Agarwal, D., Zhu, H., Porembka, M. R.

AMER SOC CLINICAL ONCOLOGY.2017

- **Pathology and Molecular Pathology of Colorectal Cancer** *Pathology and Epidemiology of Cancer: Molecular Underpinnings*
Poulin, E. J., Shen, J., Gierut, J. J., Haigis, K. M.
Springer International.2017; 1: 409–446
- **Using NSG recipient mice improves engraftment of gastric cancer patient derived xenografts** *Journal of Clinical Oncology*
Wang, S. C., Zhu, M., Nassour, I., Shen, J., Mansour, J. C., Agarwal, D., Zhu, H., Porembka, M. M.
2017; 35: 70-70
- **Clinical, pathologic, and outcome study of hyperplastic and sessile serrated polyps in inflammatory bowel disease** *HUMAN PATHOLOGY*
Shen, J., Gibson, J. A., Schulte, S., Khurana, H., Farraye, F. A., Levine, J., Burakoff, R., Cerda, S., Qazi, T., Hamilton, M., Srivastava, A., Odze, R. D.
2015; 46 (10): 1548-1556
- **Clinicopathologic Significance of Macrocytic Change in Esophageal Adenocarcinoma**
Setia, N., Agoston, A., Shen, J., Tippawong, M., Bueno, R., Zheng, Y., Odze, R. D., Srivastava, A.
NATURE PUBLISHING GROUP.2014: 203A
- **Hermansky-pudlak syndrome complicated by pulmonary fibrosis: radiologic-pathologic correlation and review of pulmonary complications.** *Journal of clinical imaging science*
Kelil, T., Shen, J., O'Neill, A. C., Howard, S. A.
2014; 4: 59-?
- **Prevalence and clinicopathologic significance of micropapillary differentiation in esophageal adenocarcinomas.** *Modern Pathology*
Shen, J., Tippayawang, M., Agoston, A., Bueno, R., Zheng, Y., Odze, R. D., Srivastava, A.
2014; 27
- **Clinicopathologic significance of macrocytic change in esophageal adenocarcinoma** *Modern Pathology*
Setia, N., Agoston, A., Shen, J., Tippawong, M., Bueno, R., Zheng, Y., Odze, R. D., Srivastava, A.
2014; 27
- **Clinical, Pathologic, and Biologic Features Associated with BRAF Mutations in Non-Small Cell Lung Cancer** *CLINICAL CANCER RESEARCH*
Cardarella, S., Ogino, A., Nishino, M., Butaney, M., Shen, J., Lydon, C., Yeap, B. Y., Sholl, L. M., Johnson, B. E., Jaenne, P. A.
2013; 19 (16): 4532-4540
- **Microsatellite Instability and BRAF Mutation Testing in Colorectal Cancer Prognostication** *JNCI-JOURNAL OF THE NATIONAL CANCER INSTITUTE*
Lochhead, P., Kuchiba, A., Imamura, Y., Liao, X., Yamauchi, M., Nishihara, R., Qian, Z. R., Morikawa, T., Shen, J., Meyerhardt, J. A., Fuchs, C. S., Ogino, S.
2013; 105 (15): 1151-1156
- **Neurocandidiasis: a case report and consideration of the causes of restricted diffusion.** *Journal of radiology case reports*
Lin, D. J., Sacks, A., Shen, J., Lee, T. C.
2013; 7 (5): 1-5
- **Isolated Ileitis May Be a Manifestation of Crohn's Disease, But Only in Symptomatic Patients: A Multi-Institution Study of 131 Cases** *Modern Pathology*
Shen, J., Najarian, R. M., Dessauvagie, B., Deshpande, V., Kumarasinghe, M. P., Hamilton, M., Shahid, M., Lauwers, G., Odze, R. D., Srivastava, A.
2013; 26
- **HER2 Mutated Lung Adenocarcinoma Is a Distinct Molecular and Clinicopathologic Entity**
Shen, J., Taneja, K., Zhang, W., Dillon, D. A., Gandhi, L., Sholl, L. M.
NATURE PUBLISHING GROUP.2012: 490A
- **Prognostic Role of Combined MSI and BRAF Mutation Status in Colorectal Cancer: Toward Routine Clinical Use**
Shen, J., Morikawa, T., Fuchs, C. S., Ogino, S.
NATURE PUBLISHING GROUP.2012: 179A
- **HER2 Mutated Lung Adenocarcinoma Is a Distinct Molecular and Clinicopathologic Entity** *Modern Pathology*
Shen, J., Taneja, K., Zhang, W., Dillon, D. A., Gandhi, L., Sholl, L. M.
2012
- **Prognostic Role of Combined MSI and BRAF Mutation Status in Colorectal Cancer: Toward Routine Clinical Use** *Modern Pathology*
Shen, J., Morikawa, T., Kuchiba, A., Fuchs, C. S., Ogino, S.

2012

- **The persistent problem of new-onset postoperative atrial fibrillation: A single-institution experience over two decades** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
Shen, J., Lall, S., Zheng, V., Buckley, P., Damiano, R. J., Schuessler, R. B.
2011; 141 (2): 559-570
- **Acute Glomerulitis with Neutrophils May Underscore the Development of Glomerular Basement Membrane Multi-Lamination in Transplant Glomerulopathy**
Gaut, J. P., Shen, J., DeGuire, M., Klein, C., Liapis, H.
NATURE PUBLISHING GROUP.2011: 344A
- **Acute glomerulitis with neutrophils may underscore the development of glomerular basement membrane multi-lamination in transplant glomerulopathy** *Modern Pathology*
Gaut, J. P., Shen, J., DeGuire, M., Klein, C., Liapis, H.
2011
- **Surgery for Lone Atrial Fibrillation: Present State-of-the-Art.** *Innovations (Philadelphia, Pa.)*
Shen, J., Bailey, M., Damiano, R. J.
2009; 4 (5): 248-255
- **The surgical treatment of atrial fibrillation** *HEART RHYTHM*
Shen, J., Bailey, M. S., Damiano, R. J.
2009; 6 (8): S45-S50
- **A temporal switch from Notch to Wnt signaling in muscle stem cells is necessary for normal adult myogenesis** *CELL STEM CELL*
Brack, A. S., Conboy, I. M., Conboy, M. J., Shen, J., Rando, T. A.
2008; 2 (1): 50-59