




## William Rowland Goodyer, MD/ PhD

Assistant Professor of Pediatrics (Cardiology)

Pediatrics - Cardiology

 NIH Biosketch available Online

### CLINICAL OFFICE (PRIMARY)

- **Office of Student Affairs**

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MSOB

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### Bio

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#### BIO

Dr. Goodyer is a physician scientist who specializes in Pediatric Cardiology and Electrophysiology. Will graduated from McGill University (Montreal, Canada) with a BSc in Biology prior to completing his graduate studies at Stanford University in the Medical Scientist Training Program (MSTP). He subsequently completed residency training in Pediatrics at Boston Children's Hospital before returning to Stanford to complete a fellowship in Pediatric Cardiology and advanced fellowship in Pediatric Electrophysiology. He additionally performed a postdoctoral fellowship in the Sean Wu laboratory at the Stanford Cardiovascular Institute where he developed the first comprehensive single-cell gene atlas of the entire murine cardiac conduction system (CCS) as well as pioneered the generation of optical imaging agents for the real-time visualization of the CCS to help prevent accidental surgical damage during heart surgeries. Will's lab ([www.goodyerlab.com](http://www.goodyerlab.com)) focuses on basic science advances aimed at the improved diagnosis and treatment of cardiac arrhythmias.

#### CLINICAL FOCUS

- Pediatric Electrophysiology
- Inherited Arrhythmias
- Clinical Cardiac Electrophysiology

#### ACADEMIC APPOINTMENTS

- Assistant Professor - University Medical Line, Pediatrics - Cardiology
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, SPARK at Stanford
- Member, Maternal & Child Health Research Institute (MCHRI)

## ADMINISTRATIVE APPOINTMENTS

- Associate Director, SPARK at Stanford, (2024- present)

## PROFESSIONAL EDUCATION

- Board Certification: Pediatrics, American Board of Pediatrics (2016)
- Board Certification: Pediatric Cardiology, American Board of Pediatrics (2020)
- Fellowship: Lucile Packard Childrens Hospital Advanced Cardiology Fellowships (2020) CA
- Medical Education: Stanford University School of Medicine (2013) CA
- MD, Stanford University School of Medicine , Medicine (MSTP Program) (2013)
- PhD, Stanford University School of Medicine , Developmental Biology (MSTP Program) (2013)
- Residency: Boston Childrens Hospital Pediatric Residency (2015) MA
- Fellowship: Stanford University Pediatric Cardiology Fellowship (2019) CA
- Peds EP Fellowship, Lucille Packard Children's Hospital , Pediatric Electrophysiology (2020)

## PATENTS

- Goodyer W, Beyersdorf B, Van Den Berg N, Rosenthal E, and Wu SM. "United States Patent PCT/US2020/040965 Novel Molecular Tools to Visualize and Target the CCS.", Leland Stanford Junior University
- Goodyer W, and Wu SM. "United States Patent PCT/US2023/015747 Monoclonal Antibodies for Targeting the Cardiac Conduction System.", Leland Stanford Junior University

## LINKS

- Lab Website: <https://www.goodyerlab.com>

## Teaching

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### STANFORD ADVISEES

#### Postdoctoral Faculty Sponsor

Robin Perelli

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Pediatric Cardiology (Fellowship Program)

## Publications

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### PUBLICATIONS

- **Benchmarking cell type and gene set annotation by large language models with AnnDictionary.** *Nature communications*  
Crowley, G., Quake, S. R.  
2025; 16 (1): 9511
- **IGFBP2 Mediates Human iPSC-Cardiomyocyte Proliferation in a Cellular Contact-Dependent Manner.** *Circulation research*  
Lee, S., Heinrich, P., Lee, D., Kang, Y., Robinson, H., Humphrey, S. J., Yun, J., Goodyer, W. R., Buikema, J. W., Paik, D. T., Galdos, F. X., Kim, B., Belbachir, et al  
2025
- **IGFBP2 Regulates Human iPSC-Derived Cardiomyocyte Proliferation Beyond Contact Inhibition**  
Lee, S., Heinrich, P., Lee, D., Kang, Y., Goodyer, W., Buikema, J., Galdos, F., Moretti, A., Wu, S.  
LIPPINCOTT WILLIAMS & WILKINS.2025
- **Molecular convergence of risk variants for congenital heart defects leveraging a regulatory map of the human fetal heart.** *medRxiv : the preprint server for health sciences*

- Ma, X. R., Conley, S. D., Kosicki, M., Bredikhin, D., Cui, R., Tran, S., Sheth, M. U., Qiu, W. L., Chen, S., Kundu, S., Kang, H. Y., Amgalan, D., Munger, et al  
2024
- **Desmoplakin Cardiomyopathy in Pediatric Patients: A Distinct, Underrecognized Cohort of Arrhythmogenic Cardiomyopathy.** *Circulation. Arrhythmia and electrophysiology*  
Choi, N. H., Cherny, S., Berul, C. I., Goodyer, W. R., Howard, T. S., Joong, A., Liberman, L., Silver, E. S., Villa, C. R., Lee, T. M., Zuckerman, W. A.  
2024: e013114
  - **Utilizing multi-omics strategies to unravel the molecular basis of heart rhythm.** *Heart rhythm*  
Lundby, A., Achter, J. S., Goodyer, W. R.  
2024; 21 (9): 1761-1762
  - **Cardiac Development at a Single-Cell Resolution.** *Advances in experimental medicine and biology*  
Wei, N., Lee, C., Duan, L., Galdos, F. X., Samad, T., Raissadati, A., Goodyer, W. R., Wu, S. M.  
2024; 1441: 253-268
  - **The cardiac conduction system: History, development, and disease.** *Current topics in developmental biology*  
Lee, C., Xu, S., Samad, T., Goodyer, W. R., Raissadati, A., Heinrich, P., Wu, S. M.  
2024; 156: 157-200
  - **Multicenter Study of Survival Benefit of Cardiac Resynchronization Therapy in Pediatric and Congenital Heart Disease.** *JACC. Clinical electrophysiology*  
Chubb, H., Mah, D. Y., Shah, M., Lin, K. Y., Peng, D. M., Hale, B. W., May, L., Etheridge, S., Goodyer, W., Ceresnak, S. R., Motonaga, K. S., Rosenthal, D. N., Almond, et al  
2023
  - **Utility of smart watches for identifying arrhythmias in children.** *Communications medicine*  
Zahedivash, A., Chubb, H., Giacone, H., Boramanand, N. K., Dubin, A. M., Trela, A., Lencioni, E., Motonaga, K. S., Goodyer, W., Navarre, B., Ravi, V., Schmiedmayer, P., Bikia, et al  
2023; 3 (1): 167
  - **Combined lineage tracing and scRNA-seq reveals unexpected first heart field predominance of human iPSC differentiation.** *eLife*  
Galdos, F. X., Lee, C., Lee, S., Paige, S., Goodyer, W., Xu, S., Samad, T., Escobar, G. V., Darsha, A., Beck, A., Bak, R. O., Porteus, M. H., Wu, et al  
2023; 12
  - **Outcomes After Development of Ventricular Arrhythmias in Single Ventricular Heart Disease Patients With Fontan Palliation.** *Circulation. Arrhythmia and electrophysiology*  
Giacone, H. M., Chubb, H., Dubin, A. M., Motonaga, K. S., Ceresnak, S. R., Goodyer, W. R., Hanish, D., Trela, A. V., Boramanand, N., Lencioni, E., Boothroyd, D., Graber-Naidich, A., Wright, et al  
2023: e011143
  - **devCellPy is a machine learning-enabled pipeline for automated annotation of complex multilayered single-cell transcriptomic data.** *Nature communications*  
Galdos, F. X., Xu, S., Goodyer, W. R., Duan, L., Huang, Y. V., Lee, S., Zhu, H., Lee, C., Wei, N., Lee, D., Wu, S. M.  
2022; 13 (1): 5271
  - **In vivo visualization and molecular targeting of the cardiac conduction system.** *The Journal of clinical investigation*  
Goodyer, W. R., Beyersdorf, B. M., Duan, L., van den Berg, N. S., Mantri, S., Galdos, F. X., Puluca, N., Buikema, J. W., Lee, S., Salmi, D., Robinson, E. R., Rogalla, S., Cogan, et al  
2022
  - **The Tabula Sapiens: A multiple-organ, single-cell transcriptomic atlas of humans.** *Science (New York, N.Y.)*  
Jones, R. C., Karkaniyas, J., Krasnow, M. A., Pisco, A. O., Quake, S. R., Salzman, J., Yosef, N., Bulthaupt, B., Brown, P., Harper, W., Hemenez, M., Ponnusamy, R., Salehi, et al  
2022; 376 (6594): eabl4896
  - **Publisher Correction: Cell types of origin of the cell-free transcriptome.** *Nature biotechnology*  
Vorperian, S. K., Moufarrej, M. N., Tabula Sapiens Consortium, Quake, S. R., Jones, R. C., Karkaniyas, J., Krasnow, M., Pisco, A. O., Quake, S. R., Salzman, J., Yosef, N., Bulthaupt, B., Brown, P., et al  
2022

- **VENTRICULAR ARRHYTHMIAS FOLLOWING transcatheter pulmonary valve replacement with the Harmony(C) TPV 25 DEVICE**  
Taylor, A., Yang, J., Dubin, A., Chubb, M., Motonaga, K., Goodyer, W., Giacone, H., Peng, L. F., Romfh, A. W., McElhinney, D. B., Ceresnak, S. R.  
ELSEVIER SCIENCE INC.2022: 1362
- **Cell types of origin of the cell-free transcriptome.** *Nature biotechnology*  
Vorperian, S. K., Moufarrej, M. N., Tabula Sapiens Consortium, Quake, S. R., Jones, R. C., Karkanas, J., Krasnow, M., Pisco, A. O., Quake, S. R., Salzman, J., Yosef, N., Bulthaupt, B., Brown, P., et al  
2022
- **Implantable Cardioverter Defibrillators in Infants and Toddlers: Indications, Placement, Programming, and Outcomes.** *Circulation. Arrhythmia and electrophysiology*  
Zahedivash, A., Hanisch, D., Dubin, A. M., Trela, A., Chubb, H., Motonaga, K., Goodyer, W., Maeda, K., Reinhartz, O., Ma, M., Martin, E., Ceresnak, S.  
2022: CIRCEP121010557
- **Identifying an Appropriate Endpoint for Cryoablation in Children with Atrioventricular Nodal Reentry Tachycardia: Is Residual Slow Pathway Conduction Associated with Recurrence?** *Heart rhythm*  
Zook, N., DeBruler, K., Ceresnak, S., Motonaga, K., Goodyer, W., Trela, A., Dubin, A., Chubb, H.  
2021
- **RNA splicing programs define tissue compartments and cell types at single-cell resolution** *ELIFE*  
Olivieri, J., Dehghannasiri, R., Wang, P. L., Jang, S., de Morree, A., Tan, S. Y., Ming, J., Wu, A., Consortium, T., Quake, S. R., Krasnow, M. A., Salzman, J.  
2021; 10
- **Molecular Profiling of the Cardiac Conduction System: the Dawn of a New Era.** *Current cardiology reports*  
Mantri, S., Wu, S. M., Goodyer, W. R.  
2021; 23 (8): 103
- **IMPLANTABLE CARDIOVERTER-DEFIBRILLATORS IN INFANTS AND TODDLERS: INDICATIONS, PLACEMENT, PROGRAMMING AND OUTCOMES**  
Zahedivash, A., Hanisch, D., Dubin, A. M., Trela, A. V., Chubb, H., Motonaga, K., Goodyer, W., Maeda, K., Reinhartz, O., Ceresnak, S.  
ELSEVIER SCIENCE INC.2021: 470
- **Massive expansion and cryopreservation of functional human induced pluripotent stem cell-derived cardiomyocytes.** *STAR protocols*  
Maas, R. G., Lee, S., Harakalova, M., Snijders Blok, C. J., Goodyer, W. R., Hjortnaes, J., Doevendans, P. A., Van Laake, L. W., van der Velden, J., Asselbergs, F. W., Wu, J. C., Sluijter, J. P., Wu, et al  
2021; 2 (1): 100334
- **CRISPR/Cas9-based targeting of fluorescent reporters to human iPSCs to isolate atrial and ventricular-specific cardiomyocytes.** *Scientific reports*  
Chirikian, O., Goodyer, W. R., Dzilic, E., Serpooshan, V., Buikema, J. W., McKeithan, W., Wu, H., Li, G., Lee, S., Merk, M., Galdos, F., Beck, A., Ribeiro, et al  
2021; 11 (1): 3026
- **Pectoral Nerve Blocks Decrease Postoperative Pain and Opioid Use After Pacemaker or Implantable Cardioverter-Defibrillator Placement in Children.** *Heart rhythm*  
Yang, J. K., Char, D. S., Motonaga, K. S., Navaratnam, M., Dubin, A. M., Trela, A., Hanisch, D. G., McFadyen, G., Chubb, H., Goodyer, W., Ceresnak, S. R.  
2020
- **Wnt Activation and Reduced Cell-Cell Contact Synergistically Induce Massive Expansion of Functional Human iPSC-Derived Cardiomyocytes.** *Cell stem cell*  
Buikema, J. W., Lee, S. n., Goodyer, W. R., Maas, R. G., Chirikian, O. n., Li, G. n., Miao, Y. n., Paige, S. L., Lee, D. n., Wu, H. n., Paik, D. T., Rhee, S. n., Tian, et al  
2020; 27 (1): 50–63.e5
- **Broad Genetic Testing in a Clinical Setting Uncovers a High Prevalence of Titin Loss-of-Function Variants in Very Early-Onset Atrial Fibrillation.** *Circulation. Genomic and precision medicine*  
Goodyer, W. R., Dunn, K., Caleshu, C., Jackson, M., Wylie, J., Moscarello, T., Platt, J., Reuter, C., Smith, A., Trela, A., Ceresnak, S. R., Motonaga, K. S., Ashley, et al

2019

- **Outcomes After Aortopulmonary Window for Hypoplastic Pulmonary Arteries and Dual-Supply Collaterals** *ANNALS OF THORACIC SURGERY*  
Bauser-Heaton, H., Ma, M., McElhinney, D. B., Goodyer, W. R., Zhang, Y., Chan, F. P., Asija, R., Shek, J., Wise-Faberowski, L., Hanley, F. L.  
2019; 108 (3): 820–27
- **Transcriptomic Profiling of the Developing Cardiac Conduction System at Single-Cell Resolution.** *Circulation research*  
Goodyer, W. R., Beyersdorf, B., Paik, D. T., Tian, L., Li, G., Buikema, J. W., Chirikian, O., Choi, S., Venkatraman, S., Adams, E. L., Tessier-Lavigne, M., Wu, J. C., Wu, et al  
2019
- **Single cell expression analysis reveals anatomical and cell cycle-dependent transcriptional shifts during heart development.** *Development (Cambridge, England)*  
Li, G., Tian, L., Goodyer, W., Kort, E. J., Buikema, J. W., Xu, A., Wu, J., Jovinge, S., Wu, S. M.  
2019
- **Outcomes After Aortopulmonary Window for Hypoplastic Pulmonary Arteries and Dual-Supply Collaterals.** *The Annals of thoracic surgery*  
Bauser-Heaton, H., Ma, M., McElhinney, D. B., Goodyer, W. R., Zhang, Y., Chan, F. P., Asija, R., Shek, J., Wise-Faberowski, L., Hanley, F. L.  
2019
- **Swinging beats: transient heart block in cardiac lymphoma** *NETHERLANDS HEART JOURNAL*  
Buikema, J. W., Goodyer, W. R., Koudstaal, S., van't Sant, J., Verheggen, P. W., de Vrey, E. A., de Smet, B. J.  
2018; 26 (9): 467–68
- **Fates Aligned: Origins and Mechanisms of Ventricular Conduction System and Ventricular Wall Development.** *Pediatric cardiology*  
Goodyer, W. R., Wu, S. M.  
2018
- **Neonatal beta Cell Development in Mice and Humans Is Regulated by Calcineurin/NFAT** *DEVELOPMENTAL CELL*  
Goodyer, W. R., Gu, X., Liu, Y., Bottino, R., Crabtree, G. R., Kim, S. K.  
2012; 23 (1): 21-34
- **Deconstructing Pancreas Developmental Biology** *COLD SPRING HARBOR PERSPECTIVES IN BIOLOGY*  
Benitez, C. M., Goodyer, W. R., Kim, S. K.  
2012; 4 (6)
- **HTP-3 links DSB formation with homolog pairing and crossing over during C. elegans meiosis** *DEVELOPMENTAL CELL*  
Goodyer, W., Kaitna, S., Couteau, F., Ward, J. D., Boulton, S. J., Zetka, M.  
2008; 14 (2): 263-274
- **Social learning and innovation are positively correlated in pigeons (Columba livia)** *ANIMAL COGNITION*  
Bouchard, J., Goodyer, W., Lefebvre, L.  
2007; 10 (2): 259-266
- **Finding and keeping your partner during meiosis** *CELL CYCLE*  
Couteau, F., Goodyer, W., Zetka, M.  
2004; 3 (8): 1014-1016