Stanford

Roeland Nusse

Virginia and Daniel K. Ludwig Professor of Cancer Research

Developmental Biology

NIH Biosketch available Online

Bio

BIO

Roel Nusse was born in Amsterdam, The Netherlands. He received his PhD from the Netherlands Cancer Institute and the University of Amsterdam in 1980. He completed postdoctoral studies at the University of California, San Francisco in 1982 working with Dr. Harold Varmus. After several years as head of the molecular biology department at the Netherlands Cancer Institute, he returned to the Bay Area and joined the Stanford faculty in 1990 as a Professor of Developmental Biology. He has been a Howard Hughes Medical Institute Investigator since 1990. He has been the chair of the department of Developmental Biology at Stanford from 1999 to 2020, Currently, he is the Virginia and Daniel K. Ludwig Professor of Cancer Research. In 2010, he was elected as a member of the National Academy of Sciences. Roel Nusse is also a fellow of the American Academy of Arts and Sciences and a member of the Royal Dutch Academy of Sciences. In 2016, he received the Breakthrough Prize in Life Sciences. In 2020, he was the recipient of the Canada Gairdner International Award, "For pioneering work on the Wnt signaling pathway and its importance in development, cancer and stem cells."

ACADEMIC APPOINTMENTS

- Professor, Developmental Biology
- Member, Bio-X
- Member, Institute for Stem Cell Biology and Regenerative Medicine
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute

ADMINISTRATIVE APPOINTMENTS

- Chair, Developmental Biology, (2007-2020)

HONORS AND AWARDS

- Canada Gairdner International Award, Gairdner Awards (2020)
- Breakthrough Prize in Life Sciences, . (2017)
- Member, US National Academy of Sciences (2010)
- Member, American Academy of Arts and Sciences (2001)
- Member, Royal Dutch Academy of Sciences (1997)
- Member, European Molecular Biology Organization (1988)

LINKS

- Nusse Lab Home Page: https://web.stanford.edu/group/nusselab/cgi-bin/lab/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our laboratory focuses on the growth, development, and integrity of animal tissues. We study various organs to identify common principles and extend these investigations to cancer and injury repair. In most organs, different cell types are generated by stem cells, which also make copies of themselves to maintain the tissue. An optimal balance between stem cells and differentiated cells is essential for proper organ function. Locally-acting signals are crucial for maintaining this balance in a spatially-organized manner, and understanding these signals is key to regulating growth.

A common theme linking our work is Wnt signaling. Research from many laboratories, including our own, has shown that Wnt proteins are essential for controlling stem cells. How this control is achieved remains unclear and is a subject of our studies, both in vivo and in cell culture. Wnt signaling is unique and differs from other pathways in many ways. The main intracellular player, β-catenin, is involved in cell adhesion but can also induce or repress genes, suggesting a fundamental link between adhesion and gene expression. As far as we know, Wnt signaling occurs in tissues, not in single cells, and emerged during the evolution of metazoan animals.

A recent interest in our lab is how the cell cycle is regulated by signals, including Wnts. We are using live imaging of cells grown as organoids and are developing novel cell cycle reporters. Other questions we address is how physiological changes, such as those occurring during hormonal stimuli, injury, or programmed tissue degeneration, impact self-renewal signals and stem cell biology.

Teaching

COURSES

2025-26

- Stem Cell Biology & Regenerative Medicine: STEMREM 201A (Aut)

2024-25

- Stem Cell Biology & Regenerative Medicine: STEMREM 201A (Aut)

2023-24

- From Cells to Organisms: HUMBIO 3A (Win)
- Stem Cell Biology & Regenerative Medicine: STEMREM 201A (Aut)

2022-23

- Cell and Developmental Biology: HUMBIO 3A (Win)
- Stem Cell Biology & Regenerative Medicine: STEMREM 201A (Aut)

STANFORD ADVISEES

Med Scholar Project Advisor

Teni Anbarchian

Doctoral Dissertation Reader (AC)

Azalia Martinez Jaimes, Miriam Sun

Postdoctoral Faculty Sponsor

Megan Agajanian

Doctoral Dissertation Advisor (AC)

Fidelia Alvina

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Cancer Biology (Phd Program)
- Developmental Biology (Phd Program)
- Stem Cell Biology and Regenerative Medicine (Phd Program)

Publications

PUBLICATIONS

- **Intermittent fasting induces rapid hepatocyte proliferation to restore the hepatostat in the mouse liver.** *eLife*
  Sarkar, A., Jin, Y., DeFelice, B. C., Logan, C. Y., Yang, Y., Anbarchian, T., Wu, P., Morri, M., Neff, N. F., Nguyen, H., Rulifson, E., Fish, M., Kaye, et al
  2023; 12

- **Beta-catenin-mediated Wnt signal transduction proceeds through an endocytosis-independent mechanism.** *Molecular biology of the cell*
  Rim, E. Y., Kinney, L. K., Nusse, R.
  2020: mbcE20020114

- **Inflammatory Cytokine TNF alpha Promotes the Long-Term Expansion of Primary Hepatocytes in 3D Culture** *CELL*
  Peng, W., Logan, C. Y., Fish, M., Anbarchian, T., Aguisanda, F., Alvarez-Varela, A., Wu, P., Jin, Y., Zhu, J., Li, B., Grompe, M., Wang, B., Nusse, et al
  2018; 175 (6): 1607-+

- **Generating Cellular Diversity and Spatial Form: Wnt Signaling and the Evolution of Multicellular Animals.** *Developmental cell*
  Loh, K. M., van Amerongen, R., Nusse, R.
  2016; 38 (6): 643-655

- **Self-renewing diploid Axin2(+) cells fuel homeostatic renewal of the liver** *NATURE*
  Wang, B., Zhao, L., Fish, M., Logan, C. Y., Nusse, R.
  2015; 524 (7564): 180-?

- **An integral program for tissue renewal and regeneration: Wnt signaling and stem cell control** *SCIENCE*
  Clevers, H., Loh, K. M., Nusse, R.
  2014; 346 (6205): 54-?

- **Interfollicular Epidermal Stem Cells Self-Renew via Autocrine Wnt Signaling** *SCIENCE*
  Lim, X., Tan, S. H., Koh, W. L., Chau, R. M., Yan, K. S., Kuo, C. J., van Amerongen, R., Klein, A. M., Nusse, R.
  2013; 342 (6163): 1226-1230

- **A Localized Wnt Signal Orients Asymmetric Stem Cell Division in Vitro** *SCIENCE*
  Habib, S. J., Chen, B., Tsai, F., Anastassiadis, K., Meyer, T., Betzig, E., Nusse, R.
  2013; 339 (6126): 1445-1448

- **Wnt Proteins Are Self-Renewal Factors for Mammary Stem Cells and Promote Their Long-Term Expansion in Culture** *CELL STEM CELL*
  Zeng, Y. A., Nusse, R.
  2010; 6 (6): 568-577

- **Purified Wnt5a protein activates or inhibits beta-catenin-TCF signaling depending on receptor context** *PLOS BIOLOGY*
  Mikels, A. J., Nusse, R.
  2006; 4 (4): 570-582

- **Wnt proteins are lipid-modified and can act as stem cell growth factors** *NATURE*
  Willert, K., BROWN, J. D., Danenberg, E., Duncan, A. W., Weissman, I. L., Reya, T., Yates, J. R., Nusse, R.
  2003; 423 (6938): 448-452

- **APEX2-Mediated Proximity Labeling of Wnt Receptor Interactors Upon Pathway Activation.** *microPublication biology*
  Rim, E. Y., Nusse, R.
  2023; 2023

- **WNT signaling in pre-granulosa cells is required for ovarian folliculogenesis and female fertility.** *Development (Cambridge, England)*
  Habara, O., Logan, C. Y., Kanai-Azuma, M., Nusse, R., Takase, H. M.
  2021; 148 (9)

- **Next-Generation Surrogate Wnts Support Organoid Growth and Deconvolute Frizzled Pleiotropy In Vivo.** *Cell stem cell*
  Miao, Y. n., Ha, A. n., de Lau, W. n., Yuki, K. n., Santos, A. J., You, C. n., Geurts, M. H., Puschhof, J. n., Pleguezuelos-Manzano, C. n., Peng, W. C., Senlice, R. n., Piani, C. n., Buikema, et al
  2020

- **A ZNRF3-dependent Wnt/beta-catenin signaling gradient is required for adrenal homeostasis** *GENES & DEVELOPMENT*
  Basham, K. J., Rodriguez, S., Turcu, A. F., Lerario, A. M., Logan, C. Y., Rysztak, M. R., Gomez-Sanchez, C. E., Breault, D. T., Koo, B., Clevers, H., Nusse, R., Val, P., Hammer, et al
  2019; 33 (3-4): 209-220

- **Wnt/beta-catenin signaling regulates ependymal cell development and adult homeostasis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Xing, L., Anbarchian, T., Tsai, J. M., Plant, G. W., Nusse, R.
  2018; 115 (26): E5954–E5962

- **Wnt/β-catenin signaling regulates ependymal cell development and adult homeostasis.** *Proceedings of the National Academy of Sciences of the United States of America*
  Xing, L. n., Anbarchian, T. n., Tsai, J. M., Plant, G. W., Nusse, R. n.
  2018

- **Stromal R-spondin orchestrates gastric epithelial stem cells and gland homeostasis.** *Nature*
  Sigal, M. n., Logan, C. Y., Kapalczynska, M. n., Mollenkopf, H. J., Berger, H. n., Wiedenmann, B. n., Nusse, R. n., Amieva, M. R., Meyer, T. F.
  2017; 548 (7668): 451–55

- **Paracrine Wnt/beta-catenin signaling mediates proliferation of undifferentiated spermatogonia in the adult mouse testis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Takase, H. M., Nusse, R.
  2016; 113 (11): E1489-E1497

- **Axin2 marks quiescent hair follicle bulge stem cells that are maintained by autocrine Wnt/β-catenin signaling.** *Proceedings of the National Academy of Sciences of the United States of America*
  Lim, X., Tan, S. H., Yu, K. L., Lim, S. B., Nusse, R.
  2016; 113 (11): E1498-505

- **Paracrine Wnt/β-catenin signaling mediates proliferation of undifferentiated spermatogonia in the adult mouse testis.** *Proceedings of the National Academy of Sciences of the United States of America*
  Takase, H. M., Nusse, R.
  2016; 113 (11): E1489-97

- **Axin2 marks quiescent hair follicle bulge stem cells that are maintained by autocrine Wnt/beta-catenin signaling** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Lim, X., Tan, S. H., Yu, K. L., Lim, S. B., Nusse, R.
  2016; 113 (11): E1498-E1505

- **Fibrosis of the Neonatal Mouse Heart After Cryoinjury Is Accompanied by Wnt Signaling Activation and Epicardial-to-Mesenchymal Transition.** *Journal of the American Heart Association*
  Mizutani, M., Wu, J. C., Nusse, R.
  2016; 5 (3)

- **Wnt/beta-Catenin-Responsive Cells in Prostatic Development and Regeneration** *STEM CELLS*
  Lee, S. H., Johnson, D. T., Luong, R., Yu, E. J., Cunha, G. R., Nusse, R., Sun, Z.
  2015; 33 (11): 3356-3367

- **A distinct regulatory region of the Bmp5 locus activates gene expression following adult bone fracture or soft tissue injury.** *Bone*
  Guenther, C. A., Wang, Z., Li, E., Tran, M. C., Logan, C. Y., Nusse, R., Pantalena-Filho, L., Yang, G. P., Kingsley, D. M.
  2015; 77: 31-41

- **A distinct regulatory region of the Bmp5 locus activates gene expression following adult bone fracture or soft tissue injury** *BONE*
  Guenther, C. A., Wang, Z., Li, E., Tran, M. C., Logan, C. Y., Nusse, R., Pantalena-Filho, L., Yang, G. P., Kingsley, D. M.
  2015; 77: 31-41

- **Helicobacter pylori Activates and Expands Lgr5(+) Stem Cells Through Direct Colonization of the Gastric Glands.** *Gastroenterology*
  Sigal, M., Rothenberg, M. E., Logan, C. Y., Lee, J. Y., Honaker, R. W., Cooper, R. L., Passarelli, B., Camorlinga, M., Bouley, D. M., Alvarez, G., Nusse, R., Torres, J., Amieva, et al
  2015; 148 (7): 1392-404 e21

- **Helicobacter pylori Activates and Expands Lgr5(+) Stem Cells Through Direct Colonization of the Gastric Glands** *GASTROENTEROLOGY*
  Sigal, M., Rothenberg, M. E., Logan, C. Y., Lee, J. Y., Honaker, R. W., Cooper, R. L., Passarelli, B., Camorlinga, M., Bouley, D. M., Alvarez, G., Nusse, R., Torres, J., Amieva, et al
  2015; 148 (7): 1392-?

- **Wnts produced by Osterix-expressing osteolineage cells regulate their proliferation and differentiation.** *Proceedings of the National Academy of Sciences of the United States of America*
  Tan, S. H., Senarath-Yapa, K., Chung, M. T., Longaker, M. T., Wu, J. Y., Nusse, R.
  2014; 111 (49): E5262-71

- **Wnts produced by Osterix-expressing osteolineage cells regulate their proliferation and differentiation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Tan, S. H., Senarath-Yapa, K., Chung, M. T., Longaker, M. T., Wu, J. Y., Nusse, R.
  2014; 111 (49): E5262-E5271

- **In Vivo clonal analysis reveals lineage-restricted progenitor characteristics in Mammalian kidney development, maintenance, and regeneration.** *Cell reports*
  Rinkevich, Y., Montoro, D. T., Contreras-Trujillo, H., Harari-Steinberg, O., Newman, A. M., Tsai, J. M., Lim, X., Van-Amerongen, R., Bowman, A., Januszyk, M., Pleniceanu, O., Nusse, R., Longaker, et al
  2014; 7 (4): 1270-1283

- **The Role of Ryk and Ror Receptor Tyrosine Kinases in Wnt Signal Transduction** *COLD SPRING HARBOR PERSPECTIVES IN BIOLOGY*
  Green, J., Nusse, R., van Amerongen, R.
  2014; 6 (2)

- **Reconstituting pancreas development from purified progenitor cells reveals genes essential for islet differentiation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Sugiyama, T., Benitez, C. M., Ghodasara, A., Liu, L., McLean, G. W., Lee, J., Blauwkamp, T. A., Nusse, R., Wright, C. V., Gu, G., Kim, S. K.
  2013; 110 (31): 12691-12696

- **Structural Studies of Wnts and Identification of an LRP6 Binding Site** *STRUCTURE*
  Chu, M. L., Ahn, V. E., Choi, H., Daniels, D. L., Nusse, R., Weis, W. I.
  2013; 21 (7): 1235-1242

- **Lineage tracing with Axin2 reveals distinct developmental and adult populations of Wnt/ß-catenin-responsive neural stem cells.** *Proceedings of the National Academy of Sciences of the United States of America*
  Bowman, A. N., van Amerongen, R., Palmer, T. D., Nusse, R.
  2013; 110 (18): 7324-7329

- **Paracrine Wnt signaling both promotes and inhibits human breast tumor growth** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Green, J. L., La, J., Yum, K. W., Desai, P., Rodewald, L., Zhang, X., LeBlanc, M., Nusse, R., Lewis, M. T., Wahl, G. M.
  2013; 110 (17): 6991-6996

- **Tympanic border cells are Wnt-responsive and can act as progenitors for postnatal mouse cochlear cells** *DEVELOPMENT*
  Jan, T. A., Chai, R., Sayyid, Z. N., van Amerongen, R., Xia, A., Wang, T., Sinkkonen, S. T., Zeng, Y. A., Levin, J. R., Heller, S., Nusse, R., Cheng, A. G.
  2013; 140 (6): 1196-1206

- **Prospective isolation of human embryonic stem cell-derived cardiovascular progenitors that integrate into human fetal heart tissue** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Ardehali, R., Ali, S. R., Inlay, M. A., Abilez, O. J., Chen, M. Q., Blauwkamp, T. A., Yazawa, M., Gong, Y., Nusse, R., Drukker, M., Weissman, I. L.

2013; 110 (9): 3405-3410

- **Wnt Signaling in Skin Development, Homeostasis, and Disease** *COLD SPRING HARBOR PERSPECTIVES IN BIOLOGY*
  Lim, X., Nusse, R.
  2013; 5 (2)
- **Developmental Stage and Time Dictate the Fate of Wnt/beta-Catenin-Responsive Stem Cells in the Mammary Gland** *CELL STEM CELL*
  van Amerongen, R., Bowman, A. N., Nusse, R.
  2012; 11 (3): 387-400
- **Endogenous Wnt signalling in human embryonic stem cells generates an equilibrium of distinct lineage-specified progenitors** *NATURE COMMUNICATIONS*
  Blauwkamp, T. A., Nigam, S., Ardehali, R., Weissman, I. L., Nusse, R.
  2012; 3
- **Wnt Proteins** *COLD SPRING HARBOR PERSPECTIVES IN BIOLOGY*
  Willert, K., Nusse, R.
  2012; 4 (9)
- **Wnt5a can both activate and repress Wnt/beta-catenin signaling during mouse embryonic development** *DEVELOPMENTAL BIOLOGY*
  van Amerongen, R., Fuerer, C., Mizutani, M., Nusse, R.
  2012; 369 (1): 101-114
- **Three decades of Wnts: a personal perspective on how a scientific field developed** *EMBO JOURNAL*
  Nusse, R., Varmus, H.
  2012; 31 (12): 2670-2684
- **ROR2 is a novel prognostic biomarker and a potential therapeutic target in leiomyosarcoma and gastrointestinal stromal tumour** *JOURNAL OF PATHOLOGY*
  Edris, B., Espinosa, I., Muehlenberg, T., Mikels, A., Lee, C., Steigen, S. E., Zhu, S., Montgomery, K. D., Lazar, A. J., Lev, D., Fletcher, J. A., Beck, A. H., West, et al
  2012; 227 (2): 223-233
- **Wnt signaling induces proliferation of sensory precursors in the postnatal mouse cochlea** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Chai, R., Kuo, B., Wang, T., Liaw, E. J., Xia, A., Jan, T. A., Liu, Z., Taketo, M. M., Oghalai, J. S., Nusse, R., Zuo, J., Cheng, A. G.
  2012; 109 (21): 8167-8172
- **Wnt Signaling** *COLD SPRING HARBOR PERSPECTIVES IN BIOLOGY*
  Nusse, R.
  2012; 4 (5)
- **The Receptor Tyrosine Kinase ROR2 Is a Novel Marker for TSC-Associated Lesions and a Potential Therapeutic Target Independent of the TSC/mTOR Pathway** *101st Annual Meeting of United-States-and-Canadian-Academy-of-Pathology (USCAP)*
  SWEENEY, R. T., Badreddin, E., Montgomery, K. D., Nusse, R., van de Rijn, M.
  NATURE PUBLISHING GROUP.2012: 491A–491A
- **Secreted Wingless-interacting molecule (Swim) promotes long-range signaling by maintaining Wingless solubility** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Mulligan, K. A., Fuerer, C., Ching, W., Fish, M., Willert, K., Nusse, R.
  2012; 109 (2): 370-377
- **Identification of Cardiovascular Progenitors From Human Embryonic Stem Cells** *Scientific Sessions of the American-Heart-Association/ Resuscitation Science Symposium*
  Ardehali, R., Ali, S., Drukker, M., Abilez, O., Blauwkamp, T., Nusse, R., Weissman, I.
  LIPPINCOTT WILLIAMS & WILKINS.2011
- **A Suppressor/Enhancer Screen in Drosophila Reveals a Role for Wnt-Mediated Lipid Metabolism in Primordial Germ Cell Migration** *PLOS ONE*
  McElwain, M. A., Ko, D. C., Gordon, M. D., Fyrst, H., Saba, J. D., Nusse, R.
  2011; 6 (11)

- **Location, Location, Location: FoxM1 Mediates beta-Catenin Nuclear Translocation and Promotes Glioma Tumorigenesis** *CANCER CELL*
  Bowman, A., Nusse, R.
  2011; 20 (4): 415-416
- **Embryonic stem cells require Wnt proteins to prevent differentiation to epiblast stem cells** *NATURE CELL BIOLOGY*
  Ten Berge, D., Kurek, D., Blauwkamp, T., Koole, W., Maas, A., Eroglu, E., Siu, R. K., Nusse, R.
  2011; 13 (9): 1070-U88
- **A crucial role for lipid phosphorylation in WntD-mediated primordial germ cell migration**
  McElwain, M. A., Ko, D. C., Gordon, M. D., Nusse, R.
  ACADEMIC PRESS INC ELSEVIER SCIENCE.2011: 192
- **Wnt Proteins Promote Bone Regeneration** *SCIENCE TRANSLATIONAL MEDICINE*
  Minear, S., Leucht, P., Jiang, J., Liu, B., Zeng, A., Fuerer, C., Nusse, R., Helms, J. A.
  2010; 2 (29)
- **Lentiviral Vectors to Probe and Manipulate the Wnt Signaling Pathway** *PLOS ONE*
  Fuerer, C., Nusse, R.
  2010; 5 (2)
- **A Study on the Interactions Between Heparan Sulfate Proteoglycans and Wnt Proteins** *DEVELOPMENTAL DYNAMICS*
  Fuerer, C., Habib, S. J., Nusse, R.
  2010; 239 (1): 184-190
- **Ror2 Receptor Requires Tyrosine Kinase Activity to Mediate Wnt5A Signaling** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Mikels, A., Minami, Y., Nusse, R.
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- **Towards an integrated view of Wnt signaling in development** *DEVELOPMENT*
  van Amerongen, R., Nusse, R.
  2009; 136 (19): 3205-3214
- **Ror2, a developmentally regulated kinase, promotes tumor growth potential in renal cell carcinoma** *ONCOGENE*
  Wright, T. M., Brannon, A. R., Gordan, J. D., Mikels, A. J., Mitchell, C., Chen, S., Espinosa, I., van de Rijn, M., Pruthi, R., Wallen, E., Edwards, L., Nusse, R., Rathmell, et al
  2009; 28 (27): 2513-2523
- **Telomerase modulates Wnt signalling by association with target gene chromatin** *NATURE*
  Park, J., Venteicher, A. S., Hong, J. Y., Choi, J., Jun, S., Shkreli, M., Chang, W., Meng, Z., Cheung, P., Ji, H., McLaughlin, M., Veenstra, T. D., Nusse, et al
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- **Wnt Signaling Mediates Self-Organization and Axis Formation in Embryoid Bodies** *CELL STEM CELL*
  ten Berge, D., Koole, W., Fuerer, C., Fish, M., Eroglu, E., Nusse, R.
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- **Wnt-mediated self-renewal of neural stem/progenitor cells** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Kalani, M. Y., Cheshier, S. H., Cord, B. J., Bababeygy, S. R., Vogel, H., Weissman, I. L., Palmer, T. D., Nusse, R.
  2008; 105 (44): 16970-16975
- **Translating insights from development into regenerative medicine: The function of Wnts in bone biology** *SEMINARS IN CELL & DEVELOPMENTAL BIOLOGY*
  Leucht, P., Minear, S., Ten Berge, D., Nusse, R., Helms, J. A.
  2008; 19 (5): 434-443
- **Wnt and FGF signals interact to coordinate growth with cell fate specification during limb development** *DEVELOPMENT*
  ten Berge, D., Brugmann, S. A., Helms, J. A., Nusse, R.
  2008; 135 (19): 3247-3257

- **Alternative Wnt Signaling Is Initiated by Distinct Receptors** *SCIENCE SIGNALING*
  van Amerongen, R., Mikels, A., Nusse, R.
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- **Liposomal Packaging Generates Wnt Protein with In Vivo Biological Activity** *PLOS ONE*
  Morrell, N. T., Leucht, P., Zhao, L., Kim, J., Ten Berge, D., Ponnusamy, K., Carre, A. L., Dudek, H., Zachlederova, M., McElhaney, M., Brunton, S., Gunzner, J., Callow, et al
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  Gordon, M. D., Ayres, J. S., Schneider, D. S., Nusse, R.
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- **Lipid-independent secretion of a Drosophila Wnt protein** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Ching, W., Hang, H. C., Nusse, R.
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- **Asymmetric homotypic interactions of the atypical cadherin Flamingo mediate intercellular polarity signaling** *CELL*
  Chen, W., Antic, D., Matis, M., Logan, C. Y., Povelones, M., Anderson, G. A., Nusse, R., Axelrod, J. D.
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- **A dermal HOX transcriptional program regulates site-specific epidermal fate** *GENES & DEVELOPMENT*
  Rinn, J. L., Wang, J. K., Allen, N., Brugmann, S. A., Mikels, A. J., Liu, H., Ridky, T. W., Stadler, H. S., Nusse, R., Helms, J. A., Chang, H. Y.
  2008; 22 (3): 303-307
- **Wnt Signaling and Stem Cell Control** *73rd Cold Spring Harbor Symposium on Quantitative Biology*
  Nusse, R., Fuerer, C., Ching, W., Harnish, K., Logan, C., Zeng, A., Ten Berge, D., Kalani, Y.
  COLD SPRING HARBOR LABORATORY PRESS.2008: 59–66
- **Wnt/beta-catenin signaling in murine hepatic transit amplifying progenitor cells** *GASTROENTEROLOGY*
  Hu, M., Kurobe, M., Jeong, Y. J., Fuerer, C., Ghole, S., Nusse, R., Sylvester, K. G.
  2007; 133 (5): 1579-1591
- **Transcriptional Program Induced by Wnt Protein in Human Fibroblasts Suggests Mechanisms for Cell Cooperativity in Defining Tissue Microenvironments** *PLOS ONE*
  Klapholz-Brown, Z., Walmsley, G. G., Nusse, Y. M., Nusse, R., Brown, P. O.
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- **Wnt signaling mediates regional specification in the vertebrate face** *DEVELOPMENT*
  Brugmann, S. A., Goodnough, L. H., Gregorieff, A., Leucht, P., Ten Berge, D., Fuerer, C., Clevers, H., Nusse, R., Helms, J. A.
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  Marino, S., Nusse, R.
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  Nusse, R.
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  Rulifson, I. C., Karnik, S. K., Heiser, P. W., Ten Berge, D., Chen, H., Gu, X., Taketo, M. M., Nusse, R., Hebrok, M., Kim, S. K.
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