Curriculum Vitae

NAME Professor Thomas B r a n d

POSITION Chair in Developmental Dynamics, Imperial College London

Deputy Director of Science, Magdi Yacoub Institute

OFFICE Harefield Heart Science Centre
National Heart and Lung Institute
Section of Cardiovascular Function
Imperial College London
Hill End Road, Harefield, UB9 6JH
United Kingdom

EDUCATION

1980 – 1987	Study of Biology, University of Bielefeld, Bielefeld Germany
1986 – 1987	Masters Thesis with Prof. Harald Jockusch, "Differentiation of atrial and ventricular myocytes in culture" Developmental Biology Unit, University of Bielefeld, Germany
1988 – 1991	Ph.D. Thesis with Prof. Wolfgang Schaper "Expression of Nuclear Proto-Oncogenes in Cardiac Hypertrophy" Max-Planck-Institute, Bad Nauheim, Germany
2001	Habilitation in Developmental Biology, Cell Biology and Molecular Biology. Habilitation Thesis: "Molecular analysis of cardiac development in vertebrate embryos"

POSITIONS

1991 – 1994	Postdoctoral fellow, Molecular Cardiology Unit (Prof. Michel Schneider), Baylor College of Medicine, Houston, U.S.A
1994 - 1998	Scientific Assistant, Cell- and Molecular Biology (Prof. Hans-Henning Arnold), University of Braunschweig, Germany
1998 – 2002	Laboratory Head, Cell- and Molecular Biology, University of Braunschweig, Germany
2003 – 2004	Lecturer, Cell- and Molecular Biology, University of Braunschweig, Germany
2004 – 2009	Associate Professor, Cell- and Developmental Biology, University of Würzburg, Germany
2009	Full Professor, Imperial College London, UK

AWARDS

1992	Richard J. Bing Award for Young Investigators, ISHR
1994	Louis N. Katz Price for Young Investigators (Finalist), AHA

REVIEWING AND BOARDS

1. Journals:

Anatomy and Embryology, American Journal Physiology, BioEssays, Cardiovascular Research, Circulation, Circulation Research, Cell and Tissue Research, Development, Developmental Biology, Developmental Dynamics, Differentiation, EMBO Journal, EMBO Reports, Genomics, International Journal of Developmental Biology, Journal Clinical Investigation, Journal of Molecular and Cellular Cardiology, Mammalian Genome, Mechanisms of Development, Molecular Genetics & Metabolism, Nature Genetics, Tissue & Cell

2. Funding agencies:

Wellcome Trust (UK), Medical Research Council (MRC, UK), BIRAX, British Heart Foundation (BHF, UK), Deutsche Forschungsgemeinschaft (DFG, Germany) United States-Israel Binational Science Foundation (Israel), German-Israeli Foundation for Scientific Research (G.I.F.), National Science Foundation (NSF, U.S.A.), NMRC (Singapore), Medical Research Council (MRC, Great Britain)

3. Editorial Boards

Developmental Dynamics, PLoS One, Journal of Developmental Biology, Pharmacology Research & Perspectives

CURRENT FUNDING

Medical Research Council
Functional Analysis of the Popeye Domain Containing Gene Family in the Mouse
£900.000

British Heart Foundation
Protein Biochemistry of the Popeye Domain Containing Family £270.000

British Heart Foundation (PhD studentship, together with Prof. Julia Gorelik, ICTEM) Functional Interaction of caveolin 3 and popeye protein 1. Compartmentation of cyclic nucleotide signaling. £60.000

PUBLICATIONS

I. Original work

1. Schaper J, Hein S, **Brand T**, Schaper W. (1989). Contractile Proteins and the cytoskeleton in isolated rat myocytes. **J. Appl. Cardiol.** 4:423-429.
2. **Brand T**, Milting H, Zippel M, Jockusch H. (1991). Differential synthesis by

cultured atrial and ventricular rat cardiac myocytes of myosin light chain isoforms. **FEBS Letters** *283*, 289- 290.
3. **Brand T**, Sharma HS, Fleischmann KE, Duncker DJ, McFalls EO, Verdouw PD, Schaper W. (1992). Proto-oncogene expression in porcine myocardium subjected to ischemia and reperfusion. **Circ Res** *71*, 1351-1360.
4. Martorana PA, **Brand T**, Gardi C, van Even P, de Santi MM, Calzoni P, Marcolongo P, Lungarella G. (1993). The pallid mouse. A model of genetic alpha 1-antitrypsin deficiency. **Lab Inv** *68*, 233-241.
5. **Brand T**, Sharma HS, Schaper WJ (1993). Expression of nuclear proto-oncogenes in isoproterenol-induced cardiac hypertrophy. **J Mol Cell Cardiol** *25*, 1325-1337.
6. **Brand T**, MacLellan WR, Schneider MD. (1993). A dominant-negative receptor for type beta transforming growth factors created by deletion of the kinase domain. **J Biol Chem***268*, 11500-11503.
7. Hein S, Scholz D, Fujitani N, Rennollet H, **Brand T**, Friedl A, Schaper J. (1994). Altered expression of titin and contractile proteins in failing human myocardium. **J Mol Cell Cardiol** *26*, 1291-1306.
8. **Brand T**, Schneider MD (1995). Inactive type II and type I receptors for TGFb are dominant inhibitors of TGFβ-dependent transcription. **J Biol Chem** *270*, 8274-8284.
9. Buchberger A, Pabst O, **Brand T**, Seidl K, Arnold HH. (1996). Chick NKx-2.3 represents a novel family member of vertebrate homologues to the *Drosophila* homeobox gene tinman. Differential expression of cNKx-2.3 and cNKx-2.5 during heart and gut development. **Mech Dev** *56*, 151-163.
10. Charng MJ, Kinnunen P, Hawker J, **Brand T**, Schneider, MD. (1996). FKBP-12 binding is dispensible for TGFβ signal transduction. **J Biol Chem** *271*, 22941-22944.
11. Pabst O, **Brand T**, Arnold HH. (1997). The mouse Nkx2-3 homeodomain gene is expressed in gut mesenchyme during pre- and postnatal mouse development. **Dev Dyn** *209*, 29-35.
12. **Brand T**, Andrée B, Schneider A, Buchberger A, Arnold HH. (1997). Chicken NKx2-8, a novel homeobox gene expressed during early heart and foregut development. **Mech Dev** *64*, 53-59.
13. Andrée B, Duprez D, Vorbusch B, Arnold HH, **Brand T.** (1998). BMP-2 induces ectopic expression of cardiac lineage markers and interferes with somite formation in chicken embryos. **Mech Dev** *70*, 119-131.
14. Buchberger A, Schwarzer M, **Brand T**, Pabst O, Seidl K, Arnold HH (1998). Chicken winged-helix transcription factor cFKH-1 prefigures axial and appendicular skeletal structures during chicken embryogenesis. **Dev Dyn** *212*, 94-101.
15. Schneider A, Mijalski T, Schlange T, Dai W, Overbeek P, Arnold HH, **Brand T. (**1999). The homeobox gene *NKX3.2* is a target of L-R signalling and is expressed on opposite sides in chicken and mouse embryos. **Curr Biol** *9*, 911-914.
16. Schlange T, Andrée B, Arnold HH, **Brand T.** (2000). Distinct requirement of BMP2 for myocardial marker gene expression in the forming heart field in chicken embryos. **Mech Dev** *91*, 259-270.
17. Andrée B, Hillemann T, Kessler-Icekson G, Schmitt-John T, Jockusch H, Arnold HH, **Brand T.** (2000). Isolation and characterization of the novel popeye gene family expressed in skeletal muscle and heart. **Dev Biol** *223*, 371-382.
18. Schneider A, **Brand T,** Zweigerdt R, Arnold HH. (2000) Targeted disruption of the Nkx3.1 gene in mice results in morphogenetic defects of minor salivary glands. Parallels to glandular duct morphogenesis in prostate. **Mech Dev** *95*,163-174.
19. Schlange T, Andrée B, Arnold HH, **Brand T.** (2000) Expression analysis of the

chicken homologue of CITED2 during early stages of embryonic development. **Mech Dev** *98*, 157-160.
20. Schlange T, Schnipkoweit I, Andree B, Ebert A, Zile MH, Arnold HH, **Brand T.** (2001). Chick cfc controls lefty1 expression in the embryonic midline and nodal expression in the lateral plate. **Dev Biol** 234, 376-389.
21. Andrée B, Fleige A, Arnold HH, **Brand T.** (2002). Analysis of Pop1 gene function in muscle development. **Mol Cell Biol** *22*, 1504-1512.
22. Schlange T, Arnold HH, **Brand T.** (2002). BMP2 is a positive regulator of Nodal signaling during left-right axis formation in the chicken embryo. **Development** 129, 3421-3429.
23. Hitz MP, Pandur P, **Brand T**, Kühl M. (2002) Cardiac specific expression of *Xenopus* Popeye-1. **Mech Dev** 115, 123–126.
24. Linask K, Han MD, Schlange T, Arnold HH, **Brand T.** (2003). Effects of antisense misexpression of *CFC* on downstream Flectin protein expression during heart looping. **Dev Dyn** 228, 217-230.
25. Breher S, Mavridou E, Froese A, Brenneis C, Arnold HH, **Brand, T.** (2004). Popeye domain containing gene 2 (Popdc2) is a myocyte-specific differentiation marker during chick heart development. **Dev Dyn** 129, 695-702.
26. Männer J, Schlüter J. **Brand T.** (2005) Experimental analyses of the function of the proepicardium using a new microsurgical procedure to induce loss-of-proepicardial-function in chick embryos. **Dev Dyn** 233, 1454-1463.
27. Torlopp A, Breher S, Schlüter J, **Brand T.** (2006) Expression analysis of Popdc1 mRNA and protein expression during early chick development. **Dev Dyn** 235, 691-700
28. Schlüter J, Brenneis C, **Brand T.** (2006) BMP is an important regulator of proepicardial identity in the chick embryo. **Dev Biol** 295, 546-558.
29. Ghatpande S, **Brand T,** Zile M, Evans T. (2006). Bmp2 and Gata4 function additively to rescue heart tube development in the absence of retinoids. **Dev Dyn** 235, 2030-2039.
30. Schulte I, Schlüter J, Abu-Issa R, **Brand T,** Männer J. (2007). Morphological and molecular left-right asymmetries in development of the proepicardium: a comparative analysis on mouse and chick embryos. **Dev Dyn** 236, 684-695
31. Parnes D, Jacoby V, Sharabi A, Schlesinger H, **Brand T**, Kessler-Icekson G. (2007). The Popdc gene family in the rat: molecular cloning, characterization and expression analysis in the heart and cultured cardiomyocytes. **Biochim Biophys Acta** 1769, 586-92.
32. Jahr M, Schlueter J, **Brand T**, Männer J. (2008) Development of the proepicardium in Xenopus laevis. **Dev Dyn.** 237:3088-96.
33. Froese A, **Brand T**. (2008). Expression pattern of Popdc2 during mouse embryogenesis and in the adult. **Dev Dyn.** 237:780-794.
34. Schlueter J, **Brand T**. (2009) A right-sided pathway involving FGF8/Snai1 controls asymmetric development of the proepicardium in the chick embryo. **Proc Natl Acad Sci U S A**. 106:7485-7490.
35. Torlopp A, Schlueter J, **Brand T**. (2010). Role of fibroblast growth factor signaling during proepicardium formation in the chick embryo. **Dev Dyn.** 239:2393–2403.
36. Gingold-Belfer R, Bergman M, Alcalay Y, Schlesinger H, Aravot D, Berman M, Salman H, **Brand T**, Kessler-Icekson G. (2011) Popeye domain containing 1 is down-regulated in failing human hearts. **Int J Mol Med**. 27:25-31
37. Fiedler J, Jazbutyte V, Kirchmaier BC, Gupta SK, Lorenzen J, Hartmann D, Galuppo P, Kneitz S, Pena JT, Sohn-Lee C, Loyer X, Soutschek J, **Brand T**, Tuschl T, Heineke J, Martin U, Schulte-Merker S, Ertl G, Engelhardt S, Bauersachs J, Thum T. (2011) MicroRNA-24 Regulates Vascularity After Myocardial Infarction. **Circulation** 124:720-730.

38. Froese A, Breher SS, Waldeyer C, Schindler RFR, Nikolaev VO, Rinné S, Wischmeyer E, Schlueter J, Becher J, Simrick S, Vauti F, Kuhtz J, Meister P, Kreissl S, Torlopp A, Liebig SK, Laakmann S, Müller TD, Neumann J, Stieber J, Ludwig A, Maier SK, Decher N, Arnold HH, Kirchhof P, Fabritz L, **Brand T**. (2012) Popeye domain containing proteins are essential for stress-mediated modulation of cardiac pacemaking in mice. **J Clin Invest** doi:10.1172/JCI59410.
39. Kirchmaier BC, Poon KL, Schwerte T, Huisken J, Winkler C, Jungblut B, Stainier DY, **Brand T.** (2012) The Popeye domain containing 2 (popdc2) gene in zebrafish is required for heart and skeletal muscle development. **Dev Biol** doi:10.1016/j.ydbio.2012.01.015.
40. Alcalay Y, Hochhauser E, Kliminski V, Dick J, Zahalka MA, Parnes D, Schlesinger H, Abassi Z, Shainberg A, Schindler RF, **Brand T**, Kessler-Icekson G. (2013) Popeye domain containing 1 (Popdc1/Bves) is a caveolae-associated protein involved in ischemia tolerance. **PLoS One**. Sep 16;8(9):e71100.
41. Schlueter J, **Brand T**. (2013) Subpopulation of proepicardial cells is derived from the somatic mesoderm in the chick embryo. **Circ Res**. 113:1128-37.
41 Buyandelger B, Mansfield C, Kostin S, Choi O, Roberts AM, Ware JS, Mazzarotto F, Pesce F, Buchan R, Isaacson RL, Vouffo J, Gunkel S, Knöll G, McSweeney SJ, Wei H, Perrot A, Pfeiffer C, Toliat MR, Ilieva K, Krysztofinska E, López-Olañeta MM, Gómez-Salinero JM, Schmidt A, Ng KE, Teucher N, Chen J, Teichmann M, Eilers M, Haverkamp W, Regitz-Zagrosek V, Hasenfuss G, Braun T, Pennell DJ, Gould I, Barton PJ, Lara-Pezzi E, Schäfer S, Hübner N, Felkin LE, O'Regan DP, **Brand T**, Milting H, Nürnberg P, Schneider MD, Prasad S, Petretto E, Knöll R (2015). ZBTB17 (MIZ) (MIZ1) Is Important for the Cardiac Stress Response and a Novel Candidate Gene for Cardiomyopathy and Heart Failure. **Circ Cardiovasc Genet**. 8:643-52.
42. Schindler RF, Scotton C, Zhang J, Passarelli C, Ortiz-Bonnin B, Simrick S, Schwerte T, Poon KL, Fang M, Rinné S, Froese A, Nikolaev VO, Grunert C, Müller T, Tasca G, Sarathchandra P, Drago F, Dallapiccola B, Rapezzi C, Arbustini E, Di Raimo FR, Neri M, Selvatici R, Gualandi F, Fattori F, Pietrangelo A, Li W, Jiang H, Xu X, Bertini E, Decher N, Wang J, **Brand T**, Ferlini A (2016). POPDC1(S201F) causes muscular dystrophy and arrhythmia by affecting protein trafficking. **J Clin Invest.** 126:239-53.
43. Reddy VK, Short SP, Barrett CW, Mittal MK, Keating CE, Thompson JJ, Harris EI, Revetta F, Bader DM, **Brand T,** Washington MK, Williams CS (2016). BVES RegulatesIntestinal Stem Cell Programs and Intestinal Crypt Viability after Radiation. **Stem Cells.** 34:1626-36.

II. Reviews

1. Sharma HS, Wünsch M, **Brand T**, Verdouw PD, Schaper W. (1992). Molecular biology of the coronary vascular and myocardial responses to ischemia. **J Cardiovasc Pharmacol** *20* (Suppl 1), S23-S31.
2. MacLellan WR, **Brand T**, Schneider MD (1993). Transforming growth factor-beta in cardiac ontogeny and adaptation. **Circ Res** *73*, 783-791.

3. Schneider MD, Kirshenbaum LK, **Brand T**, MacLellan WR. (1994). Control of cardiac gene transcription by fibroblast growth factor. **Tex Heart Inst J** *21*, 2-5.
4. Schneider MD, Kirshenbaum LA, **Brand T**, MacLellan WR. (1994). Control of cardiac gene transcription by fibroblast growth factors. **Mol Reprod Dev** *39*, 112-117.
5. Zimmermann R, Andres J, **Brand T**, Frass O, Kluge A, Knöll R, Vogt A, Schaper W. (1995). Cardiac gene expression after brief coronary occlusion. **Z Kardiol** *84* (Suppl 4), 159-165.
6. **Brand T**, Schneider MD (1995). The TGF beta superfamily: ligands, receptors transduction and function. **J Mol Cell Cardiol** *27*, 5-18. 7. Schneider, M.D. **Brand T.** (1995). Molecular analysis of TGFbeta signal transduction. Dominant-negative mutations of the type II and type I TGF beta receptor. **Ann N Y Acad Sci** *752*, 309-316.
7. **Brand T.**, Schneider, M.D. (1996). Transforming growth factor-beta signal transduction. **Circ Res** *78*, 173-179.
8. **Brand, T**, Arnold HH, Andrée B. (1999) Entwicklungsgenetische Störungen in der Kardiologie: Zusammenwirken von Grundlagenforschung und Klinik. **Med Gen***11*, 250-256.
9. **Brand T**, Butler-Browne G, Füchtbauer EM, Renkawitz-Pohl R, Brand-Saberi B (2000). EMBO Workshop Report: "Molecular Genetics of Muscle Development and Neuromuscular Diseases". **EMBO J***19*,1935-1941.
10. Andrée B, Hillemann T, Arnold HH, Kessler-Icekson G, **Brand T.** (2002). Molecular and functional analysis of *Popeye* Genes.A novel family of transmembrane proteins preferentially expressed in heart and skeletal muscle. **Exp Clin Cardiol** *7*, 99-103.
11. Kessler-Icekson G, Barhum Y, Schaper J, Schaper W, Kaganovsky E, **Brand T.** (2002). ANP expression in the hypertensive heart. **Exp Clin Cardiol** *7*, 80-84.
12. **Brand T.** (2003). Heart development: Molecular insights into cardiac specification and early morphogenesis **Dev Biol** 258: 1-19.
13. **Brand T.** (2005). The Popeye domain containing genes. **Cell Biochem Biophys** 43:95-104.
14. Schlueter J, **Brand T.** (2007). Left-right axis development: examples of similar and divergent strategies to generate asymmetric morphogenesis in chick and mouse embryos. **Cytogenet Genome Res** 117:256-67.
15. **Brand T.** (2010). Editorial: Exciting news: catecholamines in induction and regionalization of the heart. **Cardiovasc Res** 88:1-2
16. Schlueter J., **Brand T.** (2011) Origin and fates of the proepicardium. Aswan Heart Centre Science and Practise Series 1:11
17. Schlueter J, **Brand T**. (2012). Epicardial progenitor cells in cardiac development and regeneration. **J Cardiovasc Transl Res**. 5:641-53.
18. Schindler RF, Poon KL, Simrick S, **Brand T**. (2012) The Popeye domain containing genes: essential elements in heart rate control. **Cardiovasc Diagn Ther**. 2:308-19.
19. Poon KL, **Brand T. (**2013) The zebrafish model system in cardiovascular research: A tiny fish with mighty prospects. **Glob Cardiol Sci Pract**. 2013 1:9-28. doi: 10.5339/gcsp.2013.4.
20. Simrick S, Schindler RF, Poon KL, **Brand T**. (2013) Popeye domain-containing proteins and stress-mediated modulation of cardiac pacemaking. **Trends Cardiovasc Med**. 23:257-63.
21. **Brand T**. (2014) NFAT signalling and the differentiation of coronary smooth muscle cells. **Cardiovasc Res**. 101:4-6.
22. **Brand T**, Simrick SL, Poon KL, Schindler RF. (2014) The cAMP-binding Popdc proteins have a redundant function in the heart. **Biochem Soc Trans.** 42:295-301.
23. Schindler RF, Scotton C, French V, Ferlini A, **Brand T** (2016). The

Popeye Domain Containing Genes and their Function in Striated Muscle. **J Cardiovasc Dev Dis** 3:22.

24. **Brand T** (2016). Tbx18 and the generation of a biological pacemaker. Are we there yet? **J Mol Cell Cardiol.** 97:263-65.
25. Schindler RF, **Brand T** (2016). The Popeye domain containing protein family--A novelclass of cAMP effectors with important functions in multiple tissues. **Prog Biophys Mol Biol.**120:28-36

III. Book Chapters

1. **Brand T**, Jockusch H, Rippegather G, Forssmann WG. (1988). Storage and secretion of atrial natriuretic peptide (ANP) by cultured atrial and ventricular cells from the neonatal rat. In: **Functional morphology of the endocrine heart**. Forssmann, W.G., Scheuermann, D.W., Alt, J. (eds.) Springer, New York, pp. 69-74.
2. **Brand T**, Schaper J, Münkel B, Sharma HS, Bleese N, Schaper W. (1990) In situ hybridization study on MHC expression in human heart failure. In: **Muscle and Motility, Volume 2**, Maréchal, G., Carraro, U. (eds.). Intercept, Andover. pp. 175-180.
3. Schaper J, Speiser B, **Brand T. (**1993). The cytoskeleton and extracellular matrix in human hearts with dilated cardiomyopathy. In Figulla et al. (eds.) **Idiopathic Dilated Cardiomyopathy**. Springer, Berlin, pp. 75-80.
4. **Brand T**, Schneider M. (1994). Peptide growth factors as determinants of myocardial development and hypertrophy. In: **The cardiovascular response to exercise**. Fletcher, G.F. (ed.), Futura, Mount Kisco, pp. 59-99.
5. **Brand T**, Andrée B, Schlange T. (2002). Molecular Characterization of Early Cardiac Development. In: **Results and Problems in Cell Differentiation**. Vol. 38, Brand-Saberi, B. (ed.), Springer Verlag, Heidelberg pp. 215-238.
6. **Brand T.** (2004) Regulatory networks in cardiac development. In: **Cell signaling and growth factors in development**, K. Unsicker, K. Krieglstein (eds.) Wiley-VCh, Weinheim
7. Mikawa T, **Brand T.** (2010) Epicardial lineage, origins and fates. In: **Heart Development and Regeneration**, Rosenthal, N., Harvey, RP (eds.) Elsevier San Diego, U.S.A.