

Post-Doctoral Position

- 09/97-01/04 Institute of Molecular Pathology (I.M.P.)
Group Leader
- 01/04-12/04 Institute of Molecular Biotechnology of the Austrian Academy of
Sciences (IMBA)
Senior Scientist
- 01/05–current Institute of Molecular Biotechnology of the Austrian Academy of
Sciences (IMBA)
Deputy Director

Fellowships

- European Molecular Biology Organisation (EMBO)
2 Year Postdoctoral Fellowship (07/94-07/96)
- Howard Hughes Medical Institute
Postdoctoral Fellowship (07/96 – 09/97)

Awards

- Federation of the European Biochemical Societies (FEBS)
Anniversary Award 2001
- European Molecular Biology Organisation (EMBO)
Young Investigator Award 2001
- European Life Scientist Organization (ELSO)
Early Career Award 2003
- Austrian Science Fund (FWF)
Wittgenstein Prize (2009)
- European Research Council (ERC)
Advanced Research Grant (2010)

Memberships

- International Society for Stem Cell Research (ISSCR): member since 2002
- European Molecular Biology Organisation (EMBO): member since 2002
- Current Biology: Editorial Board since 2002
- European Journal of Cell Biology: Editorial Board from 2004

EMBO fellowship committee: Member since 2005, Chair since 2010

Scientific Advisory Board: Cancer Stem Cell Network, Deutsche Krebshilfe e.V.
(German Cancer Aid)

Current Opinion in Cell Biology: Editorial Board from 2009

Ten most relevant Publications

Kraut, R., Chia, W., Jan, L.Y., Jan, Y.N., and Knoblich, J.A. (1996). Role of *inscuteable* in orienting asymmetric cell divisions in *Drosophila*. **Nature** 383, 50-55.

Schober, M., Schaefer, M., and Knoblich, J.A. (1999). Bazooka recruits Inscuteable to orient asymmetric cell divisions in *Drosophila* neuroblasts. **Nature** 402, 548-551.

Schaefer, M., Petronczki, M., Dorner, D., Forte, M. and Knoblich, J.A. (2001). Heterotrimeric G-Proteins Direct Two Modes of Asymmetric Cell Division in the *Drosophila* Nervous System. **Cell**, 107, 183-194.

Betschinger, J., Mechtler, K. and Knoblich, J.A. (2003). The Par complex directs asymmetric cell division by phosphorylating the cytoskeletal protein Lgl. **Nature**, 422, 326-330.

Emery, G., Hutterer, A., Berdnik, D., Mayer, B., Wirtz-Peitz, F., Gonzalez Gaitan, M., and Knoblich, J. A. (2005). Asymmetric rab11 endosomes regulate Delta recycling and specify cell fate in the *Drosophila* nervous system. **Cell** 122, 763-773.

Betschinger, J., Mechtler, K., and Knoblich, J. A. (2006). Asymmetric segregation of the tumor suppressor brat regulates self-renewal in *Drosophila* neural stem cells. **Cell** 124, 1241-1253.

Neumüller, R.A., Betschinger, J., Fischer, A., Bushati, N., Poernbacher, I., Mechtler, K., Stephen M. Cohen, S.M. and Knoblich, J.A. (2008). Mei-P26 regulates micro RNAs and cell growth in the *Drosophila* ovarian stem cell lineage, **Nature**, 454, 241-245.

Wirtz-Peitz, F., Nishimura, T., and Knoblich, J.A. (2008). Linking cell cycle to asymmetric division: Aurora-A phosphorylates the Par complex to regulate Numb localization, **Cell**, 135, 161-173.

Schwamborn, J.C. Berezikov, E., and Knoblich, J.A. (2009). The Brat homolog TRIM32 Prevents Self-renewal in Neural Progenitors by Degrading c-Myc and Activating Micro-RNAs, **Cell**, 136, 913-925.

Mummery-Widmer, J.L., Yamazaki, M., Stoeger, T., Novatchkova, M., Chen, D., Dietzl, G., Dickson, B.J., and Knoblich, J.A. (2009) Genome-wide analysis of *Drosophila* external sensory organ development by transgenic RNAi, **Nature**, 458, 987-992.

Publications (complete list)

Lehner, C.F., Ried, G., Stern, B. and Knoblich, J.A. (1992). Cyclins and cdc2 kinases in *Drosophila*: genetic analyses in a higher eukaryote. **Ciba Foundation Symposium 170**, 97-109.

Knoblich, J.A. and Lehner, C.F. (1993). Synergistic action of *Drosophila* cyclins A and B during the G2-M transition. **EMBO Journal 12**, 65-74.

Knoblich, J.A., Sauer, K., Jones, L., Richardson, H., Saint, R. and Lehner, C.F. (1994). Cyclin E controls S phase progression and its down-regulation during *Drosophila* embryogenesis is required for the arrest of cell proliferation. **Cell 77**, 107-129.

Kreutzer, M.A., Richards, J.P., De Silva-Udawatta, M.N., Temenak, J.J., Knoblich, J.A., Lehner, C.F., and Bennett, K.L. (1995). *Caenorhabditis elegans* cyclin A- and B-type genes: A cyclin A multigene family, an ancestral cyclin B3 and differential germline expression. **Journal of Cell Science 108**, 2415-2424.

Sauer, K., Knoblich, J.A., Richardson, H. and Lehner, C.F. (1995). Distinct modes of cyclin E/cdc2c kinase regulation and S-phase control in mitotic and endoreduplication cycles of *Drosophila* embryogenesis. **Genes and Development 9**, 1327-1329.

Rhyu, M.S. and Knoblich, J.A. (1995). Spindle orientation and asymmetric cell fate. **Cell 82**, 523-526.

Knoblich, J.A., Jan, L.Y. and Jan, Y.N. (1995). Asymmetric segregation of Numb and Prospero during cell division. **Nature 377**, 624-627.

Kraut, R., Chia, W., Jan, L.Y., Jan, Y.N., and Knoblich, J.A. (1996). Role of *inscuteable* in orienting asymmetric cell divisions in *Drosophila*. **Nature 383**, 50-55.

Frise, E., Knoblich, J.A., Younger-Shepherd, S., Jan, L.Y., and Jan, Y.N. (1996). The *Drosophila* Numb protein inhibits signaling of the Notch receptor during cell-cell interaction in sensory organ lineage. **PNAS 93**, 11925-11932.

Knoblich, J. A. (1997). Mechanisms of asymmetric cell division during animal development. **Curr Opin Cell Biol 9**, 833-41.

Knoblich, J. A., Jan, L. Y., and Jan, Y. N. (1997). Asymmetric segregation of the *Drosophila* Numb protein during mitosis: facts and speculations. **Cold Spring Harb Symp Quant Biol 62**, 71-7.

Knoblich, J. A., Jan, L. Y., and Jan, Y. N. (1997). The N terminus of the *Drosophila* Numb protein directs membrane association and actin-dependent asymmetric localization. **Proc Natl Acad Sci U S A 94**, 13005-10.

Shen, C. P., Knoblich, J. A., Chan, Y. M., Jiang, M. M., Jan, L. Y., and Jan, Y. N. (1998). Miranda as a multidomain adapter linking apically localized *inscuteable* and basally localized *Staufen* and *Prospero* during asymmetric cell division in *Drosophila*. **Genes and Development 12**, 1837-46.

Jacobs, H., Knoblich, J.A., and Lehner, C.F. (1998). *Drosophila* Cyclin B3 is required for female fertility and is dispensable for mitosis like Cyclin B. **Genes and Development 12**, 3741-3751.

Glotzer, M. and Knoblich, J.A. (1998). Cell multiplication (editorial overview). **Current Opinion in Cell Biology 10**, 739-741.

- Knoblich, J.A., Jan, L.Y., and Jan, Y.N. (1999). Deletion analysis of the *Drosophila* Inscuteable protein reveals domains for cortical localization and asymmetric localization. **Current Biology** *11*, 155-158.
- Schober, M., Schaefer, M., and Knoblich, J.A. (1999). Bazooka recruits Inscuteable to orient asymmetric cell divisions in *Drosophila* neuroblasts. **Nature** *402*, 548-551.
- Schaefer, M., Shevchenko, A., Shevchenko, A. and Knoblich, J. A. (2000). A protein complex containing Inscuteable and the G alpha binding protein Pins is implicated in orienting asymmetric cell divisions in *Drosophila*. **Current Biology**, *10*, 353-362.
- Knoblich, J.A. (2000). Epithelial polarity: The ins and outs of the fly epidermis. **Current Biology**, *10*, R791-794.
- Petronczki, M. and Knoblich, J.A. (2001). DmPAR-6 directs epithelial polarity and asymmetric cell division of neuroblasts in *Drosophila*. **Nature Cell Biology**, *3*, 43-49.
- Knoblich, J.A. (2001). The *Drosophila* nervous system as a model for asymmetric cell division. In: **Brain Stem Cells**. Ed. Miyan, J., Beesley, P. and Thorndyke, M. (BIOS Scientific Publishers, Oxford). 75-89.
- Knoblich, J. A. (2001). Asymmetric Cell Division During Animal Development. **Nature Reviews Molecular Cell Biology**, *2*, 11-20.
- Bulgheresi, S., Kleiner, E. and Knoblich, J.A. (2001). Inscuteable dependent apical localization of the microtubule-binding protein Cornetto suggests a role in asymmetric cell division. **Journal of Cell Science**, *114*, 3655-3662.
- Schaefer, M. and Knoblich, J. A. (2001). Protein Localization during Asymmetric Cell Division. **Experimental Cell Research**, *271*, 66-74.
- Huynh, J. R., Petronczki, M., Knoblich, J. A., and St Johnston D. (2001). Bazooka and PAR-6 are required with PAR-1 for the maintenance of oocyte fate in *Drosophila*. **Curr Biol**. *11*, 901-906.
- Schaefer, M., Petronczki, M., Dorner, D., Forte, M. and Knoblich, J.A. (2001). Heterotrimeric G-Proteins Direct Two Modes of Asymmetric Cell Division in the *Drosophila* Nervous System. **Cell**, *107*, 183-194.
- Knoblich, J. A. (2001). The *Drosophila* nervous system as a model for asymmetric cell division. **Symp. Soc. Exp. Biol.** *53*, 75-89.
- Tekotte, H. Berdnik, D., Török, T., Buszczak, M., Jones, L. M., Cooley, L., Knoblich, J. A. and Davis, I (2002). *dcas* is required for importin- $\alpha 3$ nuclear export and mechanosensory organ cell fate specification in *Drosophila*. **Developmental Biology**, *244*, 396-406.
- Berdnik, D. and Knoblich, J. A. (2002). *Drosophila* Aurora-A is required for centrosome maturation and actin dependent asymmetric protein localization during mitosis. **Current Biology**, *12*, 640-647.
- Berdnik, D., Török, T., González-Gaitán, M., and Knoblich, J. A. (2002). The Endocytic Protein α -Adaptin Is Required for Numb-Mediated Asymmetric Cell Division in *Drosophila*. **Developmental Cell**, *3*, 221-231.
- Betschinger, J., Mechtler, K. and Knoblich, J.A. (2003). The Par complex directs asymmetric cell division by phosphorylating the cytoskeletal protein Lgl. **Nature**, *422*, 326-330.

Blumer, J. B., Bernard, M. L., Peterson, Y. K., Nezu, J., Chung, P., Dunican, D. J., Knoblich, J. A., and Lanier, S. M. (2003). Interaction of activator of G-protein signaling 3 (AGS3) with LKB1, a serine/threonine kinase involved in cell polarity and cell cycle progression: phosphorylation of the G-protein regulatory (GPR) motif as a regulatory mechanism for the interaction of GPR motifs with Gi alpha. **J Biol Chem** 278, 23217-23220.

Subramanian, A., Prokop, A., Yamamoto, M., Sugimura, K., Uemura, T., Betschinger, J., Knoblich, J. A., and Volk, T. (2003). Shortstop recruits EB1/APC1 and promotes microtubule assembly at the muscle-tendon junction. **Curr Biol** 13, 1086-1095.

Hutterer, A., Betschinger, J., Petronczki, M., and Knoblich, J. A. (2004). Sequential Roles of Cdc42, Par-6, aPKC, and Lgl in the Establishment of Epithelial Polarity during Drosophila Embryogenesis. **Dev Cell** 6, 845-854.

Betschinger, J., and Knoblich, J. A. (2004). Dare to Be Different: Asymmetric Cell Division in Drosophila, C. elegans and Vertebrates. **Curr Biol** 14, R674-685.

Hampoelz, B., and Knoblich, J. A. (2004). Heterotrimeric G proteins: new tricks for an old dog. **Cell** 119, 453-456.

Knoblich, J. A. (2005). Neurobiology: getting axons going. **Nature** 436, 632-633.

Betschinger, J., Eisenhaber, F., and Knoblich, J. A. (2005). Phosphorylation-induced autoinhibition regulates the cytoskeletal protein Lethal (2) giant larvae. **Curr Biol** 15, 276-282.

Zarnescu, D. C., Jin, P., Betschinger, J., Nakamoto, M., Wang, Y., Dockendorff, T. C., Feng, Y., Jongens, T. A., Sisson, J. C., Knoblich, J. A., Warren, S. T., and Moses, K. (2005). Fragile x protein functions with lgl and the par complex in flies and mice. **Dev Cell** 8, 43-52.

Hutterer, A., and Knoblich, J. A. (2005). Numb and alpha-Adaptin regulate Sanpodo endocytosis to specify cell fate in Drosophila external sensory organs. **EMBO Rep** 6, 836-842.

Bhalerao, S., Berdnik, D., Torok, T., and Knoblich, J. A. (2005). Localization-dependent and -independent roles of numb contribute to cell-fate specification in *Drosophila*. **Curr Biol** 15, 1583-1590.

Emery, G., Hutterer, A., Berdnik, D., Mayer, B., Wirtz-Peitz, F., Gonzalez Gaitan, M., and Knoblich, J. A. (2005). Asymmetric rab11 endosomes regulate Delta recycling and specify cell fate in the Drosophila nervous system. **Cell** 122, 763-773.

Jafar-Nejad, H., Andrews, H. K., Acar, M., Bayat, V., Wirtz-Peitz, F., Mehta, S. Q., Knoblich, J. A., and Bellen, H. J. (2005). Sec15, a Component of the Exocyst, Promotes Notch Signaling during the Asymmetric Division of Drosophila Sensory Organ Precursors. **Dev Cell** 9, 351-363.

Hampoelz, B., Hoeller, O., Bowman, S.K., Dunican, D., and Knoblich, J.A. (2005) Drosophila Ric-8 is essential for plasma membrane localization of heterotrimeric G proteins. **Nature Cell Biology**, 7, 1099-1105.

Mayer, B., Emery, G., Berdnik, D., Wirtz-Peitz, F. and Knoblich, J.A. (2005) Quantitative analysis of protein dynamics during asymmetric cell division. **Curr Biol**, 15, 1847-1854.

Zigman, M., Cayouette, M., Charalambous, C., Schleiffer, A., Hoeller, O., Dunican,

- D., McCudden, C.R., Firnberg, R., Barres, B.A., Siderovski, D.P. and Knoblich, J.A. (2005) Mammalian Inscuteable regulates spindle orientation and cell fate in the developing retina. **Neuron**, *48*, 539-545.
- Knoblich, J.A. (2005) Pins for Spines. **Nature Cell Biology**, *7*, 1057-1058.
- Vishnu, S., Hertenstein, A., Betschinger, J., Knoblich, J. A., Gert de Couet, H., and Fischbach, K. F. (2006). The adaptor protein X11Lalpha/Dmint1 interacts with the PDZ-binding domain of the cell recognition protein Rst in *Drosophila*. **Dev Biol** *289*, 296-307
- Betschinger, J., Mechtler, K., and Knoblich, J. A. (2006). Asymmetric segregation of the tumor suppressor brat regulates self-renewal in *Drosophila* neural stem cells. **Cell** *124*, 1241-1253.
- Wirtz-Peitz, F., and Knoblich, J. A. (2006). Lethal giant larvae take on a life of their own. **Trends Cell Biol** *16*, 234-241.
- Bowman, S. K., Neumuller, R. A., Novatchkova, M., Du, Q., and Knoblich, J. A. (2006). The *Drosophila* NuMA Homolog Mud Regulates Spindle Orientation in Asymmetric Cell Division. **Dev Cell** *10*, 731-742.
- Hutterer, A., Berdnik, D., Wirtz-Peitz, F., Zigman, M., Schleiffer, A. and Knoblich, J. A. (2006). Mitotic activation of the kinase Aurora-A requires its binding partner Bora. **Dev Cell**, *11*, 147-157.
- Emery, G. and Knoblich, J.A. (2006). Endosome dynamics during development. **Curr Opin Cell Biol**, *18*, 407-415.
- Gallagher, C. and Knoblich, J.A. (2006) The conserved C2 domain protein Lethal (2) giant discs regulates protein trafficking in *Drosophila*. **Dev Cell**, *11*, 641-653.
- Knoblich, J. A. (2006). Cell biology. Sara splits the signal. **Science** *314*, 1094-1096.
- Knoblich, J.A. (2007) On the backroads to cellular asymmetry, **Development** *134*, 4311-4313.
- Jüschke, C. and Knoblich, J.A. (2008) Purification of *Drosophila* Protein Complexes for Mass Spectrometry, **Methods Mol Biol.**, *420*, 347-58.
- Knoblich, J.A. (2008) Mechanisms of Asymmetric Stem Cell Division, **Cell**, *132*, 583-597.
- Schwamborn, J.C. and Knoblich, J.A. (2008) Lis1 and spindle orientation in neuroepithelial cells. **Cell Stem Cell**, *2*, 193-194.
- Bowman, S. K., Rolland, V., Betschinger, J., Kinsey, K. A., Emery, G., and Knoblich, J. A. (2008). The Tumor Suppressors Brat and Numb Regulate Transit-Amplifying Neuroblast Lineages in *Drosophila*. **Dev Cell**, *14*, 535-546.
- Speicher, S., Fischer, A., Knoblich, J. A., and Carmena, A. (2008) The PDZ Protein Canoe Regulates the Asymmetric Division of *Drosophila* Neuroblasts and Muscle Progenitors. **Curr Biol**, *18*, 831-837.
- Neumüller, R.A., Betschinger, J., Fischer, A., Bushati, N., Poernbacher, I., Mechtler, K., Stephen M. Cohen, S.M. and Knoblich, J.A. (2008). Mei-P26 regulates micro RNAs and cell growth in the *Drosophila* ovarian stem cell lineage, **Nature**, *454*, 241-245.

- Wirtz-Peitz, F., Nishimura, T., and Knoblich, J.A. (2008). Linking cell cycle to asymmetric division: Aurora-A phosphorylates the Par complex to regulate Numb localization, **Cell**, *135*, 161-173.
- Benetka, W., Mehlmer, N., Maurer-Stroh, S., Sammer, M., Koranda, M., Neumuller, R., Betschinger, J., Knoblich, J. A., Teige, M., and Eisenhaber, F. (2008). Experimental testing of predicted myristoylation targets involved in asymmetric cell division and calcium-dependent signalling. **Cell Cycle** *7*, 3709-3719.
- Barral, Y., and Knoblich, J. (2008). Cell division, growth and death (Editorial Overview). **Curr Opin Cell Biol** *20*, 647-649.
- Schwamborn, J.C. Berezikov, E., and Knoblich, J.A. (2009). The TRIM-NHL protein TRIM32 activates microRNAs and prevents self-renewal in mouse neural progenitors, **Cell**, *136*, 913-925.
- Mummery-Widmer, J.L., Yamazaki, M., Stoeger, T., Novatchkova, M., Chen, D., Dietzl, G., Dickson, B.J., and Knoblich, J.A. (2009) Genome-wide analysis of Drosophila external sensory organ development by transgenic RNAi, **Nature**, *458*, 987-992.
- Coumailleau, F., Fürthauer, M., Knoblich, J.A. and González-Gaitán, M. (2009). Directional Delta/Notch trafficking in asymmetric Sara endosomes during asymmetric cell division. **Nature**, *458*, 1051-1055.
- Neumuller, R. A., and Knoblich, J. A. (2009). Wicked views on stem cell news. **Nat Cell Biol** *11*, 678-679.
- Conder, R., and Knoblich, J. A. (2009). Fly stem cell research gets infectious. **Cell** *137*, 1185-1187.
- Neumüller, R.A. and Knoblich, J.A. (2009). Dividing cellular asymmetry: asymmetric cell division and its implications for stem cells and cancer. **Genes Dev** *23*, 2675-2699.
- Knoblich, J. A. (2010). Asymmetric cell division: recent developments and their implications for tumour biology. **Nat Rev Mol Cell Biol** *11*, 849-860.
- Khazaei, M. R., Bunk, E. C., Hillje, A. L., Jahn, H. M., Riegler, E. M., Knoblich, J. A., Young, P., and Schwamborn, J. C. (2011). The E3-ubiquitin ligase TRIM2 regulates neuronal polarization. **J Neurochem** *117*, 29-37.
- Neumüller R.A., Constance Richter, C., Fischer, A., Novatchkova, M., Neumüller, K.G. and Knoblich, J.A. (2011) Genome wide analysis of self-renewal in Drosophila neural stem cells by transgenic RNAi. **Cell Stem Cell** *8*, 580-593.
- Richter, C., Oktaba, K., Steinmann, J., Muller, J., and Knoblich, J. A. (2011). The tumour suppressor L(3)mbt inhibits neuroepithelial proliferation and acts on insulator elements. **Nat Cell Biol** *13*, 1029-1039.
- Postiglione, M. P., Juschke, C., Xie, Y., Haas, G. A., Charalambous, C., and Knoblich, J. A. (2011). Mouse inscuteable induces apical-basal spindle orientation to facilitate intermediate progenitor generation in the developing neocortex. **Neuron** *72*, 269-284.