BIOGRAPHICAL SKETCH

Robert C. Angerer

Scientific Director,
DIR/NIDCR/NIH

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEG.	YEAR(s)	FIELD OF STUDY
Ohio State University, Columbus O	B.Sc.	1966	Zoology
Johns Hopkins Univ., Baltimore, MD	Ph.D.	1973	Cell/Development
California Institute of Technology	--	6/73-12/77	Molecular/Develop.

A. Positions and Honors

Positions and Employment

9/67-6/73 Predoctoral student, Dept. of Biology, The Johns Hopkins University (Dr. Kirby D. Smith, sponsor)

9/73-6/75: American Cancer Society Postdoctoral Fellow, Division of Biology Kerckhoff Marine Laboratory, California Institute of Technology, (Dr. R.J. Britten, sponsor).

6/75-12/77 American Cancer Society (California Division) Postdoctoral Fellow, Division of Biology, California Institute of Technology (Dr. E.H. Davidson, sponsor).

1/78-6/84 Assistant Professor, Department of Biology, University of Rochester.

7/84-7/89 Associate Professor, Department of Biology, University of Rochester.

7/89-8/2004 Professor, Department of Biology, University of Rochester.

1/91-8/2004 Professor of Pediatrics in Hematology and Oncology, Univ.of Rochester School of Medicine and Dentistry

7/97-6/2003 Chair, Department of Biology, University of Rochester

10/2004 - Scientific Director, Division of Intramural Research, National Institute of Dental and Craniofacial Research, NIH

Professional Sevice

National Institute of Aging Molecular Neurobiology, ad hoc review panel (6/84). Guest member, NIH - MBY Study Section, (10/82; 6/85; 6/90) ; CTY (10/9-11/86); CBY1 (2/99.). NIH-NICHD RFA on pre-implantation development (7/21-22/86). Permanent member, NIH-MBY Study Section, 9/91--6/94. 2; NIH site visit, 1 P01 HD3710-01; CalTech 8/16-17, 1998; NIH CBY-1 study section, *ad hoc* reviewer 2/2-3/99' CDF-4, 2/3/00; NHGRI special emphasis panel, 11/8-9/01, 11/7-8/02

Honors

Phi Beta Kappa, B.Sc. *summa cum laude* and with distinction in Zoology, President's Scholarship Award 1963-66; NSF undergraduate research trainee (12/64-8/65), NIH predoctoral fellow (8/70-12/72), American Cancer Society postdoctoral fellow (7/73-7/75), American Cancer Society (California Division) postdoctoral fellow (7/75-7/77), Edward Peck Curtis Award for Excellence in Undergraduate Teaching (1983), NIH Research Career Development Award (7/84-6/89), University Mentor (1985-86).

B. Selected publications (in chronological order) (from 90 total).

LYNN, D.A., ANGERER, L.M. BRUSKIN, A.M., KLEIN, W.H. and **ANGERER, R.C.** Localization of a family of mRNAs in a single cell type and its precursors in sea urchin embryos. *Proc. Natl. Acad. Sci., U.S.A.* **80:**2656-2660 (1983).

COX, K.H., DELEON, D.V., ANGERER, L.M. and **ANGERER, R.C.** Detection of mRNAs in sea urchin embryos by in situ hybridization using asymmetric RNA probes. *Dev. Biol.* **101**, 485-502 (1984).

ANGERER. R.C. and DAVIDSON, E.H. Molecular indices of cell lineage specification in the sea urchin embryo. *Science* **226**, 1153-1160 (1984).

COX, K.H., ANGERER, L.M., LEE, J., DAVIDSON, E.H., and **ANGERER, R.C**. Cell lineage-specific programs of expression of multiple actin genes during sea urchin embryogenesis. *J. Mol. Biol.* **188**, 159-172 (1986).
ANGERER, , L.M., DOLECKI, G.J., GAGNON, M.L., LUM, R., YANG, Q., HUMPHREYS, T. and **ANGERER, R.C**. Progressively restricted expression of a homeobox gene within aboral ectoderm of developing sea urchin embryos. *Genes Dev*. **3**, 370-383 (1989).
HURLEY, D., ANGERER, L.M. and **ANGERER, R.C.** Altered expression of spatially regulated embryonic genes in the progeny of separated sea urchin blastomeres. *Development* **106**, 370-383 (1989).
YANG, Q., ANGERER, L.M. and **ANGERER, R.C**. Unusual pattern of accumulation of mRNA encoding EGF related protein in sea urchin embryos. *Science* **246**, 806-808 (1989).
REYNOLDS, S.D., ANGERER, L.M., PALIS, J., NASIR, A. and **ANGERER, R.C.** Early mRNAs, spatially restricted along the animal-vegetal axis of sea urchin embryos, include one encoding a protein related to tolloid and BMP-1. *Development* **114**, 769-786 (1992).
GAGNON, M.L., ANGERER, L.M. and **ANGERER, R.C.** Posttranscriptional regulation of ectoderm-specific gene expression in early sea urchin embryos. *Development* **114**, 457-467 (1992).
KINGSLEY, P.D., ANGERER, L.M. AND **ANGERER, R.C.** Major temporal and spatial patterns of gene expression during differentiation of the sea urchin embryo. *Dev. Biol*. **155**, 216-234 (1993).
WEI, Z., ANGERER, L.M., GAGNON, M.L. and **ANGERER, R.C**. Characterization of the SpHE promoter that is spatially regulated along the animal-vegetal axis of the sea urchin embryo. *Dev. Biol.* 1 **171**, 195-213 (1995).
KOZLOWSKI, D.J., GAGNON, M.L., MARCHANT, J.K., REYNOLDS, S.D., ANGERER, L.M. and **ANGERER, R.C.** Characterization of a SpAN promoter sufficient to mediate correct spatial regulation along the animal-vegeal axis of the sea urchin embryo. *Dev. Biol.* **176**, 95-107 (1996).
WEI, Z, ANGERER, L.M. and **ANGERER, R.C.** Multiple positive *cis*- elements regulate the asymmetric expression of the *SpHE* gene along the sea urchin embryo animal-vegetal axis *Dev. Biol,* **187**, 71-78. (1997)
MCCOON, P.E., BLACKSTONE, E., **ANGERER, R.C.** and ANGERER, L.M. (1998) Sea urchin FGFR muscle-specific expression: Posttranscriptional regulation in embryos and adults. *Dev. Biol*. **200**, 171-182
WEI, Z., ANGERER, R.C. and ANGERER, L.M. (1999) Identification of a new sea urchin Ets protein by yeast one-hybrid screening with the hatching enzyme promoter. *Mol. Cell. Biol*. **19**, 1271-1278
WEI, Z., ANGERER, L.M. and **ANGERER, R.C.** Spatially regulated SpEts4 transcription factor activity along the sea urchin embryo animal-vegetal axis. *Development* **126**, 1729-1737 (1999).
KENNY, A.P., KOZLOWSKI, D.J., OLEKSYN, D.W., ANGERER, L.M. and **ANGERER, R.C.** SpSoxB1, a maternally encoded transcription factor asymmetrically distributed among early sea urchin blastomeres *Development* **126**: 5473-5483 (1999).
ANGERER, L.M. and **ANGERER, R.C**. "Animal-vegetal axis patterning mechanisms in the early sea urchin embryo." *Dev. Biol* **218**: 1-12 (2000).
ANGERER, L.M., OLEKSYN, D., LOGAN, C.Y., MCCLAY, D.R., DALE, L. and **ANGERER, R.C.** A BMP4 pathway regulates cell fate allocation along sea urchin embryonic axes *Development* **127:**1105-1114 (2000).
HOWARD, E.W., NEWMAN, L.A., OLEKSYN, D.W., **ANGERER, R.C.** and ANGERER, L.M. *SpKrl:* a direct target of `beta`-catenin regulation required for endoderm differentiation in sea urchin embryos. *Development* **128,** 365-375(2001).
ANGERER, L.M., OLEKSYN, D.W., LEVINE, A., LI, X., KLEIN, W.H. and **ANGERER, R.C.** Sea urchin goosecoid function links fate specification along the animal-vegetal and oral-aboral embryonic axes. *Development* **128**, 4393-4404 (2001).

ANGERER, L.M. and A**NGERER, R.C.** "Patterning the sea urchin embryo: gene regulatory networks, signaling pathways and cellular interactions." *Current Topics Dev. Biol*. **53**: 159-198 (2001).

KENNY, A.P., OLEKSYN, D.W., NEWMAN, L.A., **ANGERER, R.C.** and Angerer, L.M. Tight regulation of SoxB factors is required for patterning and morphogenesis in sea urchin embryos, *Dev. Biol.* **261**, 412-425. (2003).

ANGERER, L.M., NEWMAN, L.A. and **ANGERER, R.C**. SoxB1 downregulation in vegetal lineages of sea urchin embryos is achieved by both transcriptional repression and selective protein turnover. *Development* **132**, 998-1008 (2005)

WEI, Z., **ANGERER, R.C**. and ANGERER, L.M. (2006) A database of mRNA expression patterns for the sea urchin embryo. *Dev. Biol.* 300, 476-484.Sea Urchin Genome Sequencing Consortium (2006) The genome of the sea urchin *Strongylocentrotus purpuratus. Science* 300, 914-952.

ANGERER, R.C. and ANGERER, L.M. "Sea urchin embryo: specification of cell fate." (3rd edition 2012) Encyclopedia of Life Sciences, John Wiley & Sons, Ltd: Chichester http://www.els.net

ANGERER, L.M. and ANGERER, R.C "Disruption of gene function using antisense morpholinos." *Methods in Cell Biology,* chapter 28, pp. 628-711 (2004).

ANGERER, L.M., KENNY, A.P., NEWMAN, L.A. and **ANGERER, R.C**. (2006) Mutual antagonism of SoxB1 and canonical Wnt signaling in sea urchin embryos. *Cell Signaling 7*, 174-180 (2006)**WEI, Z., ANGERER, R.C**. and **ANGERER, L.M**. A database of mRNA expression patterns for the sea urchin embryo. *Dev. Biol*. **300**, 476-484 (2006).

YAGUCHI, S., YAGUCHI, J., **ANGERER, R.C.** and ANGERER, L.M. A Wnt-FoxQ2-nodal pathway links primary and secondary axis specification in sea urchin embryos. *Dev Cell* **14**, 97-108 (2008).

SETHI, A, **ANGERER, R.C**. and ANGERER, L.M. Sea urchin Gene Regulatory Networks In Endomesoderm Induction, *PLOS, Biology* **7**(2): e1000029 (2009).

WEI, Z., YAGUCHI, J., YAGUCHI, S., **ANGERER, R. C**. and ANGERER, L.M. The sea urchin animal pole domain is a Six3-dependent neurogenic patterning center. *Development* 136, 1179-1189 (2009).

WEI, Z, **ANGERER, R.C**., ANGERER, L.M. (2011) Direct development of neurons within foregut endoderm of sea urchin embryos. Proc. Nat. Acad. Sci USA, 108, 9143-9147. In this issue.

ANGERER, L.M., YAGUCHI, S., ANGERER, R.C. and BURKE, R.D. (2011) The evolution of nervous system patterning: insights from sea urchin development. Development 138: 3613-3623

ADAMS, D.K., SEWELL, M.A., **ANGERER, R.C**., and ANGERER, L.M. (2011) Rapid adaptation to food availability by a dopamine-mediated morphogenetic response. Nature Comm, 2:592doi:10.1038/ncomms1603 (2011)

SETHI, A.S., **ANGERER, R.C.,** RANGE, R. and ANGERER, L.M. (2011) Endomesoderm segregation involves cross talk between Notch and Wnt pathways through multiple intersecting regulatory circuits. Science 335:590-92 (Editor's Choice, Science Signaling).

WEI, Z., RANGE, R., **ANGERER, R.C**. and ANGERER, L.M. (2011) Axial patterning interactions in the sea urchin embryo: suppression of nodal by Wnt1 signaling. Development 139, 1662-9 (2012)