

Volume 2 Winter Issue

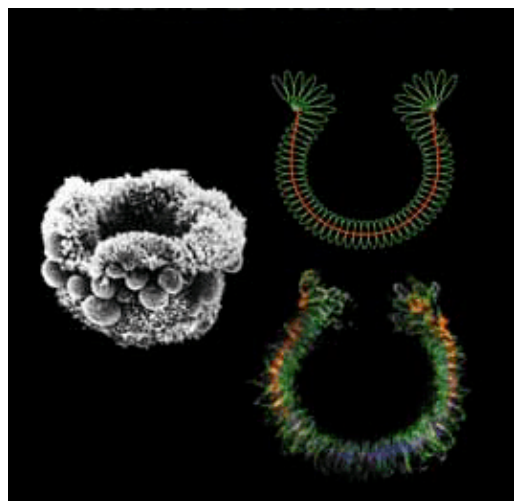


Table of Contents

Use Arrows to Browse
Previous Issues

Contact CBE

8120 Woodmont Avenue Suite
750

Bethesda, Maryland 20814-
2762

Phone: (301) 347-9300

Fax: (301) 347-9350

cbe@ascb.org



FEATURES

- **Approaches to Biology Teaching and Learning: Science Teaching and Learning Across the School–University Divide—Cultivating Conversations through Scientist–Teacher Partnerships**
by Kimberly D. Tanner, Liesl Chatman, and Deborah Allen
- **From the National Academies**
by Jay B. Labov
- **Fueling Education Reform: Historically Black Colleges Are Meeting a National Science Imperative**
by Steve Suitts
- **Meeting Report: The First National Academies Summer Institute for Undergraduate Education in Biology**
by William Wood and James Gentile
- **Video Views and Reviews**
by Christopher Watters
- **WWW.Cell Biology Education**
by Robert Blystone
- **Review of: Creating Significant Learning Experiences, by L. Dee Fink**
A Convincing, Not-So-Modest Proposal for Classroom Transformation
by Rae S. Brosnan
- **Review of: Discovering Genomics,**



Supported in part by an
Undergraduate Science
Education Program
grant from the
Howard Hughes Medical
Institute

**Proteomics, and Bioinformatics, by A.
Malcolm Campbell and Laurie Heyer**
**Think Outside of the Box—Think
Genomic**

by Ram Samudrala

- **Points of View:**
**Is *Bio2010* the Right Blueprint for the
Biology of the Future?**
by Donald Kennedy and James Gentile

ESSAY

- **Balancing Teaching and Research
Experiences in Doctoral Training
Programs: Lessons for the Future
Educator**
by Michael J. Wolyniak

ARTICLES

- **Evolving Strategies for the
Incorporation of Bioinformatics Within
the Undergraduate Cell Biology
Curriculum**
by Jerry E. Honts
- **Investigations of Protein Structure
and Function Using the Scientific
Literature: An Assignment for an
Undergraduate Cell Physiology
Course**
by Amy B. Mulnix
- **Evaluation of Two CD-ROMs from a
Series on Cell Biology**
by Uwe Sander, Gertraude Kerlen,
Mattias Steinke, Thomas Huk, and
Christian Floto
- **Learning Biology through Research
Papers: A Stimulus for Question-
Asking by High-School Students**

by Gilat Brill and Anat Yarden

- **Apoptosis: A Four-Week Laboratory Investigation for Advanced Molecular and Cellular Biology Students**

by Susan M. DiBartolomeis and James P. Moné

ANNOUNCEMENTS

September 3–7, 2005, Sydney, Australia

15th International Society of Developmental Biologists Congress

Submit Your Manuscript

Online Manuscript Submission

- **Instructions to Authors**
- **Top Ten Reasons to Publish in CBE**
[pdf]

Other Information:

There are **6,450** registered users signed up to receive quarterly notification of new content.

[Become a registered user.](#)

Order a Free CBE Poster

On the Cover [\[Printable Cover\]](#)



Inversion is the process by which Volvox embryos turn inside-out to assume the adult configuration.

Middle left: A scanning electron micrograph of a Volvox embryo in

early-to-mid inversion. An opening has formed at one pole of the embryo, and four lips of cells flanking the opening have begun curling outward and backward over the rest of the embryo. Top right: A diagrammatic sagittal section of an early-inversion embryo illustrating the role that is played by cell movements and a coherent network of cytoplasmic bridges (continuous red line) in generating the curvature of the cell sheet. Cells near the opening in the embryo form long, thin stalks at their outer ends, and then move inward relative to the cytoplasmic bridge network. This causes neighboring cells to go from being connected at their widest points to being connected at their narrowest points, which forces the cell sheet to curl outward like an opening fan. Lower right: A confocal sagittal section of an embryo stained with antibodies to reveal the locations of microtubules (green), nuclei (blue), and an inversion-specific kinesin (InvA) that is located in the cytoplasmic bridges. A mutation in the gene encoding InvA causes inversion to arrest at an early stage, indicating that this kinesin plays a key role in driving the inversion process. See Nishii et al. (2003) "A kinesin, InvA, plays an essential role in *Volvox* morphogenesis." *Cell* 113: 743–753. Images courtesy of David Kirk, Washington University in St. Louis.