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IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

JEFFREY MICHAEL SELMAN, Plaintiff, v. COBB COUNTY SCHOOL DISTRICT, et al., Defendants.	CIVIL ACTION FILE NO.: 1:02-CV-2325-CC

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INTRODUCTION

Amici curiae are scientists who live in the State of Georgia and throughout the United States. Each of the individual signatories to the brief has earned a science-related doctoral degree. Amici include tenured university professors, research scientists and scientists in private industry. Amici are all scientists who question neo-Darwinian evolutionary theory (the modern Darwinian theory of evolution) from a scientific perspective, as well as evolutionary accounts of the chemical origin of the first life on Earth. That is to say, amici are scientists who are skeptical of the ability of random mutations and natural selection to account for the origin and complexity of life.

INTEREST OF AMICI CURIAE

Amici wish to inform the Court that there is a live and growing scientific controversy surrounding neo-Darwinian theory and that issues surrounding the theory implicated in this case are the subject of serious academic debate. Furthermore, Amici, as doctoral scientists, wish to correct Plaintiff's erroneous claim that no scientists question neo-Darwinian theory. Amici also recognize the scientific controversy over whether chemical evolutionary theory can adequately explain the origin of the first life on Earth. Finally, Amici assert that the science education necessary to equip students for the 21st Century should not censor

relevant scientific information about important scientific controversies (such as neo-Darwinian and chemical evolutionary theories), but should fully inform students about such scientific debates.

COMPLETE LIST OF AMICI CURIAE

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ARGUMENT

Scientific discoveries of the last few decades have led to greater skepticism over the ability of the mechanisms of neo-Darwinian evolutionary theory to account for the complexity of life we see today. Amici represent a sampling of the growing number of scientists who are skeptical of neo-Darwinism's claim that the undirected mechanisms of natural selection and random genetic variations can account for the complexity of life. Amici also represent a number of scientists who are skeptical of chemical evolutionary theory's ability to account for the origin of life.

Amici contest Plaintiff's assertion that no scientists disagree with neo-Darwinian theory or with chemical evolutionary theory.[1] This brief refutes that

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[1] Plaintiff was particularly misleading in its assessment of the scientific controversy over neo-Darwinian theory in stating:

> The disclaimer cannot be read except as an indictment of evolution. There exists no scientific theory which disputes it. There exists no scientist practicing in the field of evolution which disputes it. The only people who dispute evolution do so for religious reasons. Evolution is a fact. No credible scientist in any biological research field disputes that evolution is a fact. ... "There is no scientific dispute in the peer-reviewed scientific literature as to whether evolution is a fact and occurs."

Plaintiff's Response to Defendant's Motion for Reconsideration. Filed, May 11, 2004. Pgs 1-2. (Internal citations omitted.)

claim. Amici are doctoral scientists who are skeptical of neo-Darwinian theory and chemical evolutionary theory on scientific grounds. Neo-Darwinian theory is being re-examined by scientists in light of new scientific discoveries. Scientific discoveries of the past few years and the increasing body of scientific knowledge available today makes the claims of neo-Darwinian theory far less tenable than in the early part of the 20th Century. One biochemist has gone so far as to describe neo-Darwinian theory as "a theory in crisis."[2] An increasing number of scientific publications directly challenge neo-Darwinian theory, or key aspects of it.[3] Recent

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[2] Michael J. Denton, Evolution: A Theory in Crisis (1986).

[3] *See, e.g.,* Michael J. Behe and David W. Snoke, "Simulating Evolution by Gene Duplication of Protein Features that Require Multiple Amino Acid Residues," *Protein Science* 13 (October, 2004): 2651-64; Michael J. Behe, "Irreducible Complexity: Obstacle to Darwinian Evolution," in (William A. Dembski and Michael Ruse, eds.), Debating Design: From Darwin to DNA (2004) 352-370; Michael J. Behe, "Self-Organization and Irreducibly Complex Systems: A Response to Shanks and Joplin," *Philosophy of Science* 67 (March, 2000); Michael J. Behe, Darwin's Black Box: The Biochemical Challenge to Evolution (1996); William A. Dembski, No Free Lunch: Why Specified Complexity Cannot be Purchased Without Intelligence (2002); Michael J. Denton, Nature's Density (1998); Denton, Evolution: A Theory in Crisis, *passim*; Stephen C. Meyer, "The Origin of Biological Information and the Higher Taxonomic Categories," *Proceedings of the Biological Society of Washington* 117 [no. 2] (2004): 213-239; Stephen C. Meyer, Marcus Ross, Paul Nelson, and Paul Chien, "The Cambrian Explosion: Biology's Big Bang," in (John Angus Campbell and Stephen C. Meyer, eds.), Darwin, Design and Public Education (2003): 323-402; Scott A. Minnich and Stephen C. Meyer, "Genetic Analysis of Coordinate Flagellar And Type III Regulatory Circuits in Pathogenic Bacteria," Second International Conference on Design & Nature (2004); Jeffrey H. Schwartz, Sudden Origins: Fossils, Genes and the Emergence of Species (1999).

discoveries have also lead to greater challenges facing traditional chemical evolutionary scenarios for the origin of the first life from non-life.

Neo-Darwinian theory presently remains the dominant theory of origins in the scientific community, but serious debate now exists about its sufficiency. Although amici represent a minority position within the scientific community, dissenting viewpoints have always been an integral part of the scientific process. Scientists debate about how to best interpret data. When such debates are raging, students need to know about them.

In addition to amici and other scientists who are skeptical of neo-Darwinian theory, there are many scientists who still accept the theory but acknowledge some of its difficulties. Many such scientists have pointed to scientific problems surrounding aspects of neo-Darwinian theory.[4]

There are two main parts of neo-Darwinian evolutionary theory: universal common descent and the power of natural selection. Scientific publications highlight neo-Darwinian theory's problems related to pattern; i.e. the large-scale

[4] *See, e.g.*, selected essays in (Gerd B. Müller and Stuart A. Newman, eds.), Origination of Organismal Form: Beyond the Gene in Developmental and Evolutionary Biology (2003); James W. Valentine, On the Origin of Phyla (2004): 189-194.

geometry of biological history.[5] Questions remain as to how organisms are related to one another and how we can detect such relationships. An increasing number of scientists have raised questions about whether there is sufficient evidence for universal common descent.

Other scientific publications underscore Darwinian theory's difficulties concerning process; i.e., the mechanisms of evolution.[6] Questions persist as to

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[5] *See, e.g.*, Michael S. Y. Lee, "Molecular Clock Calibrations and Metazoan Divergence Dates," *Journal of Molecular Evolution* 49 (1999): 385-391; Michael S. Y. Lee, "Molecular Phylogenies Become Functional," *Trends in Ecology and Evolution* 14 (1999): 177-178; Simon Conway Morris, "Evolution: Bringing Molecules into the Fold," Cell 100 (2000):1-11; Simon Conway Morris, "The Cambrian 'Explosion' of Metazoans," in Origination of Organismal Form, *passim*: 13-32; Simon Conway Morris, "The Question of Metazoan Monophyly and the Fossil Record," *Progress in Molecular and Subcellular Biology* 21 (2003):1-9; Simon Conway Morris, "Cambrian 'Explosion' of Metazoans and Molecular Biology: Would Darwin be Satisfied?" *International Journal of Developmental Biology* 47(7-8) (2003):505-515; James W. Valentine, & D. Jablonski. 2003. "Morphological and developmental macroevolution: a paleontological perspective," *International Journal of Developmental Biology* 47 (2003):517-522; P. Willmer, "Convergence and Homoplasy in the Evolution of Organismal Form," in Origination of Organismal Form, *passim*: 33-50; P. Willmer, Invertebrate Relationships: Patterns in Animal Evolution (1990); Carl Woese, "The Universal Ancestor," *Proceedings of the National Academy of Sciences USA* 95 (1998): 6854-6859.

[6] *See, e.g.*, H. Becker & W. Lonnig, "Transposons: Eukaryotic," *in* Nature Encycolpedia of Life Sciences, vol. 18 (2001): 529-539; Michael J. Behe and David W. Snoke, "Simulating Evolution by Gene Duplication of Protein Features that Require Multiple Amino Acid Residues," *passim*; R. L. Carroll, "Towards a New Evolutionary Synthesis," *Trends in Ecology and Evolution* 15 (2000): 27-32; D. H. Erwin, "Early Introduction of Major Morphological Innovations," *Acta Palaeontologica Polonica* 38: (1994) 281-294; S.F. Gilbert, et al., "Resynthesizing

whether microevolutionary processes can be extrapolated to prove macroevolutionary change. Still other scientific publications call into question the ability of neo-Darwinian mechanisms to generate novel genetic information, novel organs, structures and body plans.

In addition, many scientific publications have questioned whether chemical evolutionary theory can explain the origin of the first life from non-living chemicals (the "origin-of-life" problem).[7]

Evolutionary and Developmental Biology," *Developmental Biology* 173 (1996): 357-372; B. C. Goodwin, "What are the Causes of Morphogenesis?" *BioEssays* 3 (1985):32-36; W. E. Lonnig & H. Saedler, "Chromosome Rearrangements and Transposable Elements," *Annual Review of Genetics* 36 (2002): 389-410; Simon Conway Morris, "Evolution: Bringing Molecules into the Fold," *Cell* 100 (2000): 1-11; Simon Conway Morris, Cambrian "Explosion" of Metazoans and Molecular Biology: Would Darwin Be Satisfied?" *International Journal of Developmental Biology* 47[7-8] (2003): 505-515; Olivier Rieppel, "Turtles as Hopeful Monsters," *BioEssays* 23 (2001): 987-991; N. H. Shubin & C. R. Marshall, "Fossils, Genes and the Origin of Novelty," in Deep Time (2000): 324-340; B. M. Stadler et. al, "The Topology of the Possible: Formal Spaces Underlying Patterns of Evolutionary Change," *Journal of Theoretical Biology* 213 (2001):241-274; K. S. Thomson, "Macroevolution: The Morphological Problem, *American Zoologist* 32 (1992):106-112; James W. Valentine, On the Origin of Phyla (2004): 189-194; G. P. Wagner & P.F. Stadler, "Quasi-Independence, Homology and the Unity-C of Type: A Topological Theory of Characters," *Journal of Theoretical Biology* 220 (2003): 505-527; G. Webster & B. Goodwin, Form and Transformation: Generative and Relational Principles in Biology (1996).

For discussion of many of the above references, see Stephen C. Meyer, "The Origin of Biological Information and the Higher Taxonomic Categories," *passim*..

[7] *See, e.g.*, Simon Conway Morris, Life's Solution: Inevitable Humans in a Lonely Universe (2003): 22-43, and esp. 44-68; Paul Davies, The Fifth Miracle: The Search for the Origin and Meaning of Life (2000); Leslie E. Orgel, "The

Amici reiterate that standard high school and college biology textbooks routinely ignores scientific data challenging neo-Darwinian and chemical evolutionary theories, as well as scientific data that merely pointing to widely-acknowledged scientific problems confronting those theories.

Furthermore, many textbooks contain purported evidences for neo-Darwinian theory that have long been discredited by scientists, including neo-Darwinists.[8] Amici assert that school boards should be able to take reasonable

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Origin of Life—A Review of Facts and Speculations," *Trends in Biochemical Science* 23 (1998): 491-495; Antonio Lazcano & Stanley Miller, "The Origin and Early Evolution of Life: Prebiotic Chemistry, the Pre-RNA World, and Time," 85 *Cell* 793, 793 (1996); Hubert Yockey, Information Theory and Molecular Biology (1992): esp. 259-293; Robert Shapiro, Origins: A Skeptic's Guide to the Creation of Life on Earth (1986): esp. 132-154; Robert Shapiro, "Prebiotic Ribose Synthesis: A Critical Analysis," 18 *Origins of Life & Evolution Biosphere* 71, 71-85 (1988); *see also* Walter Bradley, "Information, Entropy and the Origin of Life," in Debating Design, *passim*: 331-351; Stephen C. Meyer, "DNA and the Origin of Life: Information, Specification and Explanation," in Darwinism, Design and Public Education, *passim*: 223-285; Charles B. Thaxton et al., The Mystery of Lifes's Origin: Reassessing Current Theories (1984).

[8] *See, e.g.,* Jerry Coyne, "Not Black and White," *Nature* 396 (1998): 35-36; Stephen Jay Gould, "Abscheulich! (Atrocious!)" *Natural History* (March, 2000), pp. 42-49; Judith Hooper, Of Moths & Men: An Evolutionary Tale: The Untold Story of Science and the Peppered Moth (2002); Craig Millar & David Lambert, "Industrial Melanism – A Classic Example of Another Kind? *BioScience* 49 (1999): 1021-1023; Elizabeth Pennisi, "Haeckel's Embryos: Fraud Rediscovered," *Science* 277 (1997): 1435; Michael Richardson et al., "There is No Highly Conserved Embryonic Stage in the Vertebrates: Implications for Current Theories of Evolution and Development," *Anatomy & Embryology* 196 (1997): 91-106; Theodore D. Sargent, Craig D. Millar & David Lambert, "The 'Classical' Explanation of Industrial Melanism: Assessing the Evidence," *Evolutionary*

steps to ensure that students are fully-informed about the scientific controversy surrounding Darwin's theory and that their curriculum is free from factual errors, including those that overstate the case for neo-Darwinian theory and chemical evolutionary theory.

In some instances, it is likely that metaphysical preferences and presuppositions of some scientists have prevented students from learning about scientific challenges to neo-Darwinian and chemical evolutionary theories or prevented the correction of textbook errors that overstate the case for neo-Darwinian and chemical evolutionary theories.

The lack of public science classroom coverage given to the growing scientific controversy surrounding neo-Darwinian evolutionary theory and frequent inclusion of erroneous information about the subject in textbooks (without any corrective counter-balances) present a dilemma for many school board members, administrators and educators who wish to teach neo-Darwinian and chemical evolutionary theories—but also wish to do so in the fairest and most accurate

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Biology 30 (1998): 299-322; Jonathan Wells, "Haeckel's Embryos & Evolution: Setting the Record Straight," *American Biology Teacher*, (May 1999): 345-349; Jonathan Wells, "Second Thoughts About Peppered Moths," *Scientist* 11 (May 24, 1999): 13; *see also* Jonathan Wells, Icons of Evolution: Science or Myth?: Why Much of What We Teach About Evolution is Wrong (2000).

manner possible. In light of the controversy over neo-Darwinism, the controversy over the chemical origin of life and importance of critical thinking skills as a part of good science education, Amici believe it entirely reasonable for the Cobb County School Board's to adopt the textbook insert stating:

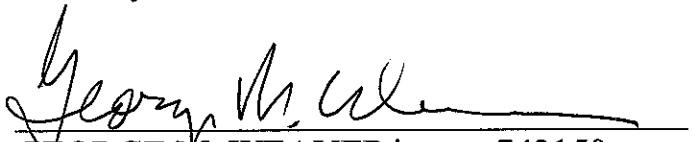
> This textbook contains material on evolution. Evolution is a theory, not a fact, regarding the origin of living things. This material should be approached with an open mind, studied carefully, and critically considered.

CONCLUSION

For the foregoing reasons, amici curiae urge the Court to find in favor of the Defendants.[9]

Respectfully submitted,

Attorneys for Amici Curiae



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[9] This brief has been prepared in Times New Roman (14 pt.) font, which has been approved by the Local Rules of this Court.

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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

JEFFREY MICHAEL SELMAN, Plaintiff, v. COBB COUNTY SCHOOL DISTRICT, et al., Defendants.	CIVIL ACTION FILE NO.: 1:02-CV-2325-CC

CERTIFICATE OF SERVICE

I hereby certify that the foregoing document was served upon all parties and the following individuals by first class mail:

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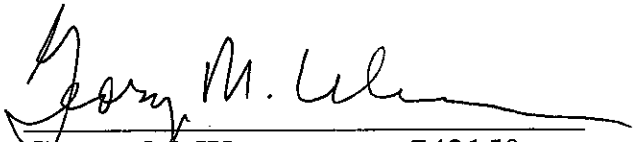

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