Would You Mortgage Your DNA?
Prompting Meaningful Reading and Writing in Science with *Genome*

Today’s youth come from disparate cultures and bring to the classroom wide-ranging ability levels. To ensure they grow as readers and learners, disciplinary teachers will need a repertoire of responsive and engaging content literacy instructional practices (Brozo & Simpson, 2007; Heller & Greenleaf, 2007). More and more teachers are turning to graphic novels to support content learning and increase print experience for youth (Brozo, Moorman, & Meyer, 2013).

Shanahan and Shanahan (2008) argue that for students to be judged scientifically literate, they must be proficient in the discourses of science, which include reading, writing, and talking science. These characteristics can be nurtured by graphic novels and comics, as the typical science textbook may be uninspiring (Rowe, 2005) and difficult to access, especially for struggling readers and learners of English (Fang, 2006; Monnin, 2010). Unlike textbooks, graphic novels are from youths’ popular culture and thus integral to their lives; as a result, they can help bridge the gap between inside- and outside-of-school literacies (Morrison, Bryan, & Chilcoat, 2002). Furthermore, graphic novelists and comic book writers present content in a manner that can be used to encourage students to become critical consumers of science—a core goal of science literacy (Hapgood & Palincsar, 2007).

*Genome: A Read-Aloud for Science*

Imagine a menacing future world in which the entire human genetic code or genome is patented by a single megacorporation and all human reproduction is strictly controlled. Parents must apply for licenses to have children and must make mortgage payments to keep them. This is the dark premise for the graphic novel *Genome* by Andrew Glasgow and JM Schichtel (n.d.) that I introduced to Jared, an eighth-grade science teacher in the middle school where I was working as a literacy consultant. After Jared responded favorably to my invitation to the eighth-grade team to engage in joint lesson planning, we discussed possible literacy strategies and alternative texts for his upcoming unit on DNA. Though initially reluctant, Jared read and studied *Genome* on his own before deciding to use this gripping read-aloud as accompaniment and counter-point to the related chapter in the science textbook. He reasoned that his general education students, for whom the textbook was generally a challenging read, would find the facts and information about genes and human genetics more interesting and their learning would be more permanent if he could link the topic to a compelling graphic narrative.

Together we planned how to take the fullest advantage of a single graphic novel. Every class session, two to three days per week depending on the block schedule, Jared read aloud from *Genome* directly after a short mid-class break. Although he asked his students first and foremost to enjoy the story and the visual information, which he shared on the document camera, he...
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The story follows Mallow, a single father working construction after dropping out of college. He struggles to keep his son, Damon, a talented violinist, from the grip of a monolithic corporation that owns his son’s genetic material. In spite of his best efforts, Mallow’s son has been foreclosed upon and taken away by Genome, the name of the evil corporation that holds mortgag-es on human genetic material. The plot takes us to a place in the not-so-distant future, with fully computerized cars and holographic video games. Our government has become swallowed up by greed and is controlled by monolithic industry. Crumbling from immense debt and massive unemployment, America seems doomed. It is up to Mallow to discover how to rescue his son from the grips of this decaying empire and from custody of Genome Inc.

In spite of its dark themes, *Genome* is a lively read, and because the story is based on a screenplay, the graphic novel has a cinematic feel. We planned ways to take full advantage of these features by periodically involving students in impromptu readers theater activities. We made multiple copies of the relevant pages and invited individuals to participate. For example, during the scene when Genome’s thugs come to “reposess” Mallow’s son, Damon, four eager volunteers were asked to join us in the front of the class. After taking assigned roles—two were the Genome heavies, one was Mallow, and one Damon—they quickly read over their lines to prepare. Then, as Jared set it up and took the narrator parts, the students reenacted this dramatic scene, much to the delight of their classmates.

Afterward, Jared prodded students to consider whether this frightening dystopic future could ever become a reality in their lifetimes. Most agreed it wasn’t possible, while some took the position that governments already know about and can control people through the Internet, mobile phones, and digital navigation. Jared then refocused his class on issues related to genetic engineering, particularly on stem cells, the topic they had been covering from their textbook. He formed pairs of students and had them respond to one of the five SPAWN writing prompts (Special powers, Problem solving, Alternative viewpoints, What if, and Next). I had described and demonstrated the SPAWN strategy (Brozo & Simpson, 2007) during a whole-school professional development day; Jared was among several teachers from a variety of disciplines who had asked for extra support to design contextualized
SPAWN prompts can be crafted in a limitless variety of ways to stimulate students’ meaningful thinking about content-area topics (Fisher, Brozo, Frey, & Ivey, 2011). The writing stimulated by SPAWN is typically short in length and can be kept in students’ class notebooks or logs. Jared’s SPAWN prompts required his students to write thoughtfully and verifiably about stem cells, a topic they had been exploring in their textbook and other readings while also being read to from Genome. Jared designed the following prompts in a way that not only required his students to use textual evidence in their responses but also instigated critical thinking about differing perspectives on stem cell research, its medical value and ethics, and the role of government.

**Special Powers:** The President of the United States has assigned you to be chairman of the committee on funding stem cell research and has given you full authority to make those decisions. How will you use your power?

**Problem Solving:** You are the lead researcher in a lab that specializes in stem cell research. Your lab is located in a conservative state. You are offered private funding from a major corporation. What do you do?

**Alternative Viewpoints:** You are a journalist who has been assigned to report on a university debate on stem cell research. What do you hear?

**What If:** What if the federal government decided to provide unlimited funding for stem cell research?

**Next:** Your child has just been in an accident. The doctors say he is paralyzed and will never walk again. However, you have been offered an opportunity to have your child participate in an experimental therapy involving embryonic stem cells. What do you do next?

A student pair writing to the Problem Solving prompt responded in this way:

*We will accept private funding; however, we will only conduct experimentation with adult stem cells. We refuse to experiment with embryonic stem cells not only because we are located in a conservative state but because of our own personal beliefs. We believe there is no harm done in extracting adult stem cells from already mature living tissues; there’s no harm done to the donor of the stem cells; the recipients who receive the products of their own stem cells will not experience immune rejection. Adult stem cells are proven to be highly beneficial and effective in curing disease. We oppose embryonic stem cell research because we do not agree it is ethical to sacrifice a life to help continue another.*

A pair of students writing to the Alternative Viewpoints prompt composed the following:

*At this debate, we heard opinions from people with different views concerning stem cell research. One group, Group A, supported embryonic stem cell research, and the other group, Group B, supported adult stem cell research. Group A backed up its opinions by stating how versatile embryonic stem cells can be. They have the ability to form all cell types, such as insulin secreting cells, nerves, and heart cells. Also, embryonic stem cells have the ability to repair cells damaged by a heart attack by forming heart cells, as stated above. They also mentioned that although embryonic stem cell research involves the destruction of human life, it has the potential to cure diseases that could continue the life of another. Group B defended their stance by saying adult stem research involved no ethical issues because no lives are destroyed. There is low risk to tumor growth and these cells will not be rejected by the immune system. Also, they stated that adult stem cells can be used to treat several major diseases, including leukemia, lymphoma, and some inherited blood disorders. Each group clearly had interesting and valid information to back up their viewpoints in this debate.*

Jared liked these prompts because they sampled his students’ ability to read texts closely and to make logical inferences from them, as well as to cite specific evidence when writing to support conclusions drawn from the texts—both are critical Common Core literacy standards. SPAWN writing challenged the students to combine Genome’s
big, provocative ideas about the role of government and private industry in genetic research and patent rights with the specific information on stem cells gleaned from the biology textbook.

**A Final Reflection**

By reading aloud from the thought-provoking and gripping graphic novel during the study of genes and genetics, Jared was able to stimulate interest in the topic.

Additionally, Jared’s middle graders were the beneficiaries of his fluent and expressive reading (Dreher, 2003), as well as his modeling of the important work of navigating uniquely formatted graphic novel text, panels, and gutters (Rosen, 2009).

An added bonus was that once the unit concluded, many of Jared’s students were eager to read *Genome* on their own. It delighted him to have to set up a check-out system with the graphic novel due to such high interest. It is well documented that students tend to seek out books they first encounter through read-alouds and then read them on their own (Brozo & Tomlinson, 1986; Serafini & Giorgis, 2003). We can’t afford to pass up such an effective incentive.

**References**


**CONNECTIONS FROM READWRITE THINK**

**Would You Mortgage Your DNA? Prompting Meaningful Reading and Writing in Science with Genome**

Books about science allow readers to encounter new concepts, ask new questions, and discover what we can learn simply by paying close attention to our surroundings. Tune in to this ReadWriteThink.org podcast episode to hear about an array of science books for teens, books which offer up crisp writing and memorable characters while telling a good story. You’ll hear about ecology and climate change, food production, infectious disease, ancient human history, the universe, and our power as humans for both ingenuity and destruction. After listening to this episode, be sure to print out this list of recommended titles to take to the library or book seller.

http://bit.ly/1xFzVHz
Heller, R., & Greenleaf, C. L. (2007). Literacy instruction in the content areas: Getting to the core of middle and high school improvement. Washington, DC: Alliance for Excellent Education.


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Candidates Announced for Middle Level Section Elections; 
Watch for Your Ballot

The Middle Level Section Nominating Committee has named the following candidates for Section offices in the NCTE spring elections:

For Members of the Middle Level Section Steering Committee (two to be elected; terms to expire in 2019): James Blasingame, Arizona State University, Tempe; Shanetia P. Clark, Salisbury University, Maryland; Elizabeth G. Dinkins, Bellarmine University, Louisville, Kentucky; Van G. Garrett, Lanier Middle School, Houston, Texas.

For Members of the Middle Level Section Nominating Committee (three to be elected; terms to expire in 2016): Jason P. Augustowski, Belmont Ridge Middle School, Lansdowne, Virginia; Cheryl Golden, Seneca Ridge Middle School, Sterling, Virginia; Chuck Miller, J. T. Henley Middle School, Crozet, Virginia; Margaret A. Pickett, Salem State University, Massachusetts; Laura Pope, Baltimore City Community College, Maryland; Holly Spinelli, City-As-School High School, New York, New York.

Members of the 2014–15 Middle Level Section Nominating Committee are Dorothy Fontaine, Wakefield School, The Plains, Virginia, chair; Juliet Duggins, Jordan J. Mott Middle School, Bronx, New York; and Katie Shepherd Dredger, James Madison University, Harrisburg, Virginia.