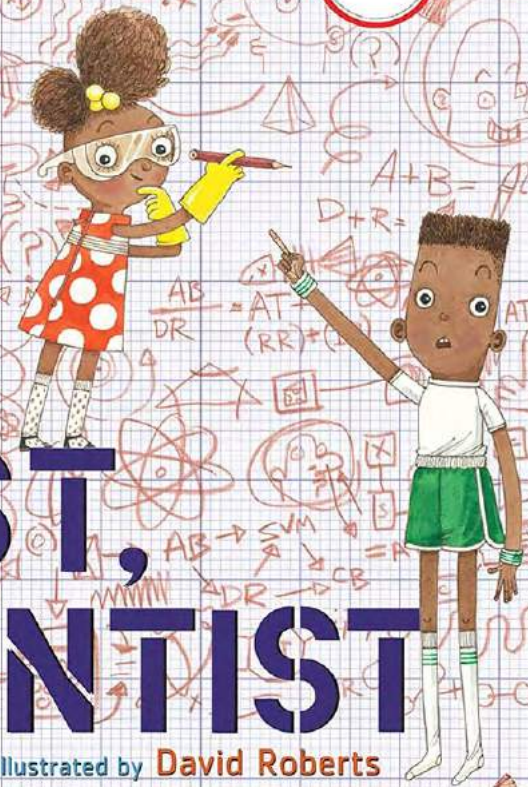


From the New York Times bestselling creators of
Iggly Peck, Architect and *Rosie Revere, Engineer*



ADA TWIST, SCIENTIST

by **Andrea Beaty** illustrated by **David Roberts**



FAMILY READING KIT

I'm yours to keep!
Please remember to return
the Library book.



“Books are sometimes windows, offering views of the world that may be real or imagined, familiar or strange. These windows are also sliding glass doors, and readers have only to walk through in imagination to become part of whatever world has been created or recreated by the author. When lighting conditions are just right, however, a window can also be a mirror. Literature transforms the human experience.”

— Rudine Sims Bishop

Diverse children’s fiction, like this book, may have perspectives and content that are new and sometimes complex. Reading a wide variety of children’s literature gives children a chance to develop their own opinions and encourages deep thinking, emotional intelligence, and imagination. The contents of this reading kit can help to initiate conversations and spark interest, provide learning and teaching opportunities, and create time for your family to connect. The questions and activities encourage discussion on various topics to help foster self-reflection and a lifelong love of learning. We hope you enjoy reading together!

<p>BOOK <i>Ada Twist, Scientist</i></p>	<p>Ada Marie Twist has been trying to figure out how things work since she was a baby. Ada asks all the questions that a good scientist should, often leading to chaos at home and at school. Will Ada solve the mystery of the source of the terrible stink? Beautiful, whimsical illustrations capture all the chaos, confusion, and joy that surround Ada and her family.</p>
<p>AUTHOR Andrea Beaty</p>	<p>Andrea Beaty grew up in southern Illinois where she spent a lot of time outdoors hunting for adventure, laughing with her siblings, and reading lots of books. Now, she likes to visit schools to share her books with students and has a secret ambition to star in a Broadway musical.</p>
<p>ILLUSTRATOR David Roberts</p>	<p>David Roberts lives in England. He has illustrated many books, often using pen, ink, pencil, watercolours, and pastels. He finds inspiration from movies, art, music, wallpaper and fabric, and fashion. When he isn’t busy illustrating books, he loves to make hats.</p>
<p>CONTEXT</p>	<p>Ada Marie Twist is named after two pioneering female scientists, Ada Lovelace and Marie Curie. Ada Lovelace was a mathematician and is regarded as the first computer programmer. Marie Curie was a physicist and a chemist and the first woman to win a Nobel Prize, amongst other firsts.</p>
<p>RECOMMENDED FOR Grade K – 3, Ages 5 – 8, English Language Learners</p>	



**This booklet is yours
to keep.**

Please return the
Library books when
they are due.

HOW TO USE THE FAMILY READING KIT

WHAT IS THE FAMILY READING KIT?

The Family Reading Kit is an opportunity to encourage literacy by reading a book together and doing fun learning activities inspired by the book. The reading kit can be used in a classroom or by independent readers, too. Each year, Calgary Public Library chooses titles that are relevant, high-interest, and appealing to readers of all ages.

What is family literacy and why is it so important?

Family literacy is a great way to practise, encourage, and develop reading skills as a family. Sharing a book out loud and reading together strengthens bonds between family members and helps create lifelong learners. The Library is proudly committed to supporting lifelong learning.

More information about Family Literacy can be found at abclifeliteracy.ca

English Language Arts Curricular Connections

While each grade and subject have specific curricular topics, each Family Reading Kit supports the overlapping outcomes between grade levels in English Language Arts in Alberta. Some titles may also connect to other topics and subjects in school, such as Science or Social Studies.

More information about ELA curricular connections can be found at calgarylibrary.ca/ela-curriculum-connect

WHAT IS INCLUDED IN THE FAMILY READING KIT?

Everything you need to explore this book is included! This package contains:

BOOK SUMMARY AND TIPS FOR READING TOGETHER

pages 2, 5, and 6

Get some background information on the book and its author(s) and illustrator(s). Use this section to plan your family's reading journey.

BOOK DISCUSSION QUESTIONS

pages 7 – 9

Book discussion questions are a great way to start thinking about the book you are reading. They help you slow down and think about what you have just read or what you are about to read next.

ACTIVITIES

Each package contains two activities that help you explore ideas from the book in different and exciting ways at home and in your community.

SEEING THE BIGGER PICTURE THROUGH REAL WORLD APPLICATIONS:

How to Use the Scientific Method

pages 10 – 15

Bigger Picture activities are a fun way to explore some of the larger themes in the title and how they apply to ourselves, our communities, and the different cultures and perspectives of the wider world.

Ada Twist, Scientist includes themes of scientific discovery, curiosity, critical thinking, and perseverance.

REFLECTING AND SHARING ABOUT WHAT YOU'VE READ:

Making a Knowledge Tree

pages 17 – 19

Sharing activities might include telling someone about a similar experience you've had, how the book made you feel, or doing your own book talk. This activity also invites reflection on your own learning and reading experience.

ADDITIONAL RESOURCES

pages 20 – 23

All packages include Additional Resources with further reading on topics / themes in the book and suggestions for what to read next.

Please fill out a survey to provide your feedback on your family's experience at calgarylibrary.ca/family-reading-survey

SHARING WITH OTHER FAMILIES

Share your family's photos, book review, writing, artwork, audio, and video with others who read this book, on the Library's Padlet at calgarylibrary.ca/family-reading-padlet

TIPS FOR READING TOGETHER

1. Create a Special Reading Space

- Nice lighting, no distractions, and a cozy nook make a great spot for reading. Or take reading on the go with an audiobook on your next family road trip.

2. Schedule Reading Time

- Plan for your family reading. Read ahead, take turns reading, and make time to chat about what you learned. As a group, make decisions about how you will read and who will read.

3. Think Outside the Book

- Involve your listeners — encourage them to get involved in the story with laughter, sound effects, actions, and different voices for different characters. Little readers might get distracted, so offer a pen and paper for their own illustrations.

4. Listening / Pausing / Talking

- Listening is an important part of reading skills. It takes practise to focus and listen to what is said.
- Let everyone have a turn talking and sharing.
- As you read, take time to talk about what is happening and what is going to happen in the story. If your listeners are curious, this is where your book discussion questions can shine and spark great conversations!

Get more tips and tricks for reading together at calgarylibrary.ca/reading-tips

READING A PICTURE BOOK TOGETHER

Picture books are special experiences for readers of any age! Illustrations help tell the story, but they also support readers in five important ways.

ILLUSTRATIONS:

1. make us want to read and interact with text
2. promote creativity, imagination, and understanding
3. provide clues to help readers understand text and build reading comprehension
4. build visual literacy skills and aesthetic appreciation
5. support language and literacy development

Reading picture books provides children with many of the skills that are necessary for school success and becoming lifelong readers: vocabulary, sound structure, the meaning of print, the structure of stories and language, sustained attention, the pleasure of learning, and more.

DIALOGIC READING

Having conversation about the book you're reading, or "dialogic reading," helps kids become active participants in the story. Asking questions about the pictures in a book is a great way to start dialogic reading.

The adult becomes the listener, the questioner, and the audience for the child.

Tips to try dialogic reading at home can be found at calgarylibrary.ca/read-aloud



BEFORE THE BOOK

You can start using dialogic reading before you've even opened the book. Considering the cover, you can ask some or all of the following questions. If your child isn't interested in answering the questions, you can also point out what you notice or wonder about based on the cover.

1. What do you think will happen during the book based on the art on the cover?
2. What can we tell about Ada from the illustration and the title?
3. What questions would you ask the author or illustrator before reading the book?
4. What do you know about scientists? Can you name any scientists?
5. On the cover, the spread of the Great Thinking Hall, and the page where Ada's on the ladder, Ada writes out her thought processes to help her think through a problem. Within these notes, the reader can find science bits and other fun things. On the cover, there are letters throughout the drawing including AB, DR, SVM, CB, IP, RR, and AT. What could these letters stand for?
6. What bits of science facts can you find on the cover and on the Great Thinking Hall wall?

As you dive deeper into reading together, you may come across some tough questions and topics. Here are some tips from Common Sense Media on talking about these questions with your kids:

- Check in by sharing how you feel and ask them how they feel. You can say, "I feel angry when I know that someone got hurt," or "It makes me feel sad to hear that someone didn't get a good education or the right treatment to help them," and "What are you feeling right now?"
- Ask open-ended questions to get kids to think more deeply about serious topics. For example, "What did you hear?," "What did it make you think?," and "Why do you think that?" For older kids, you can ask, "Do you think families from other backgrounds would view this the same way as us?"
- Admit when you don't know something. You can say, "I don't know. Let's try to find out more."

Source: calgarylibrary.ca/difficultsubjects

Answer to question 5: AB=Andrea Beaty, DR=David Roberts, SVM=Susan Van Metre (editor), CB=Chad Beckerman (Art Director), IP=Iggy Peck, RR=Rosie Revere, AT=Ada Twist

Answer to question 6: E=mc², atomic structure, equilateral triangles, ball and stock representations of atoms, graphing, and more!

AFTER READING

When you've finished the book, you can keep asking questions. Try asking:

1. Were your predictions about the book correct? What surprised you?
2. What can you tell about Ada's brother by looking at the illustrations? Do you think he had anything to do with the horrible stench? (Hint: look closely at the illustration on the very last page above the Author's Note.)
3. What are some ways the author and illustrator showed that time was passing throughout the book?
5. What is something you saw in the book that you want to try (real or imaginary)?
6. What is happening on the back cover? Is it something you would like to know more about?
7. What do the illustrations tell us about Ada when she was a baby? Ask your kids if they have questions about when they were babies.
8. Ada wonders why the clock is called a grandfather clock and not a granddaughter clock. What do you think? What is a common item in your house and where do you think it got its name?
9. Like Ada Twist, Albert Einstein did not talk until he was four years old. He also caused lots of disruption at school. Does behaviour at school always mean someone is smart or not? Why might Ada (and Einstein) have caused problems at school? Are there other parts of the book that remind you of Einstein?
10. Ada often makes a lot of messes and mistakes. How are making a mess and making mistakes (and trying again!) an important part of being a scientist?
11. How did Ada follow the scientific method to determine the mystery smell? What was her question? Her research? Her hypotheses? Her experiments? Did she draw a conclusion? What are some questions that are important for scientists to ask?
12. What can you see in Ada's drawing on the wall? What questions do you think she was asking there?
13. "[Ada Twist] had all the traits of a great scientist." What do you think makes her a great scientist?
14. Ada wants to know what the world is about. She is very curious. What do you wonder about after reading *Ada Twist, Scientist*?
15. "Theme" is a lesson that the reader takes away from a text. What did this text teach you? What are some of the book's themes?



SEEING THE BIGGER PICTURE THROUGH REAL WORLD APPLICATIONS:

HOW TO USE THE SCIENTIFIC METHOD

Ada Twist, Scientist includes themes of perseverance or never giving up, curiosity, women and diverse representation in science, scientific discovery, and critical thinking / inquiry.

ACTIVITY

Ada wants to know how things work. She comes up with experiments to help answer her questions, but they don't always turn out the way she thinks they will! Just like Ada uses the scientific method to test hypotheses (educated guesses) and find the source of the awful smell in the book, you can use the scientific method, too. Try these two science experiments that use the scientific method to make a hypothesis and draw your own conclusions.

WHAT IS THE SCIENTIFIC METHOD?

Ask a Question: Scientists are curious and wonder about the world around them.

Gather information and observe: Savvy scientists use print and digital resources to help find the best way to do things and ensure they don't repeat mistakes from the past. They also observe the world closely.

Make a Hypothesis: A hypothesis is an educated guess or prediction about how things work. It is an attempt to answer a question with an explanation that can be tested. A good hypothesis allows you to then make a prediction, like:

"IF _____ *I DO THIS* _____ ,

THEN _____ *THIS* _____ WILL HAPPEN."

Test Your Hypothesis by Doing an Experiment: Your experiment tests whether your prediction is true and if your hypothesis is supported or not. It is important for experiments to be a fair test. Scientists repeat experiments several times to make sure that the first results weren't just an accident.

Analyze Your Data and Draw a Conclusion: Once your experiment is complete, you collect your measurements and review them to see if they support your hypothesis or not. Scientists often find that their predictions were not true and their hypothesis was not supported. When this happens, they will go back and make a new hypothesis and prediction based on what they learned during the first experiment. Even if they find that their hypothesis was supported, they may want to test it again in a new way. Repeating experiments to see if you get the same results is an important part of the scientific method.

Communicate Your Results: Professional scientists communicate their findings with other scientists and the public by publishing their final report in a scientific journal, by presenting their results on a poster, or giving a talk at a scientific meeting. Findings are important whether they support the original hypothesis or not.

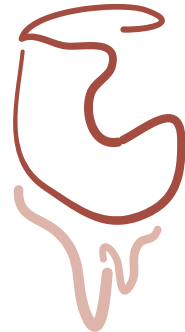
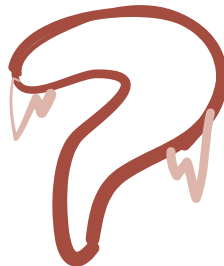


SCIENCE EXPERIMENT #1:

HOW QUICKLY DO DIFFERENT FROZEN LIQUIDS MELT?

MATERIALS REQUIRED:

- Different liquids, like milk, water, iced tea, vinegar, maple syrup, dish soap, and orange juice
- Ice cube trays
- Freezer
- Timer or stopwatch setting on a phone
- Notebook or paper for writing questions and results



INSTRUCTIONS:

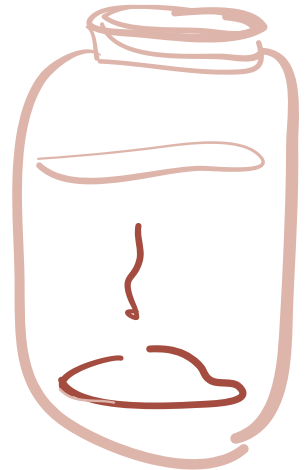
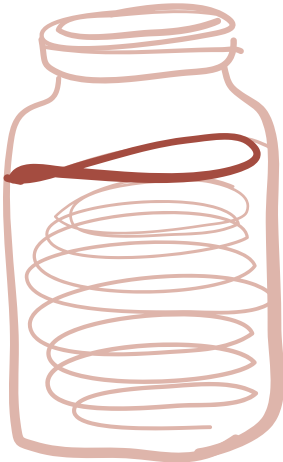
1. Pour different liquids into each section of the ice cube tray and freeze overnight.
2. In your scientific notebook, write your questions about these liquids and how they freeze and melt. Which liquids will melt faster? Will all the liquids freeze?
3. Record your hypothesis.
"If *I do this* , then *this* will happen."
or "I think *this* will happen because ."
Younger children have less background knowledge and experience than older children and might need support to make a hypothesis. A good sentence prompt for younger children is "I wonder if ?" or "I wonder what will happen when ?"
4. Make a list of what you can control and keep the same in the experiment. For example, the ice cubes are the same size and the temperature in the room is the same for all ice cubes. Things that are kept the same in an experiment are called "controls."
5. Make a list of everything that is different in the experiment or what cannot be controlled. For example, the liquids you chose to freeze, and whether the liquids are bubbly like pop, thick like syrup, or have texture, like pulp in orange juice. Things that scientists can control or change in an experiment are called variables.
6. Once all your liquids have frozen overnight, pull them out of the freezer and set the timer. Watch the cubes and see which melts first. Which melts second? Last?
7. Record the results in a notebook. Did any liquids not freeze at all?
8. Think about what you saw and draw a conclusion. Think back and use your hypothesis. Does what you saw support your hypothesis? Did something surprise you? What do you know now that you've done the experiment that you didn't know before? What will you try differently next time? What if you changed a control into a variable?
9. Draw or illustrate the steps of your experiment and label it. Older kids might try to record their data as a bar or line graph.

SCIENCE EXPERIMENT #2:

WHICH KITCHEN INGREDIENTS WILL DISSOLVE?

MATERIALS REQUIRED:

- Four clear, glass jars filled with plain tap water
- Different powders, like flour, baking soda, salt, sugar, baby powder / talcum
- Spoon or stir stick
- Teaspoon



INSTRUCTIONS:

1. In your scientific notebook, write your questions about these ingredients and how they dissolve. I.e.: Does it matter how thick the powder is?

2. Record your hypothesis.

"If I do this , then this will happen."

Or "I think this will happen because _____."

Younger children have less background knowledge and experience than older children and might need support to make a hypothesis. A good sentence prompt for younger children is "I wonder if _____?" or "I wonder what will happen when _____?" Help your child write down their predictions.

3. Scoop a teaspoon of each powder into the jars, only adding one powder per jar. Stir it up.

4. Keep track of controls. What can we control and keep consistent? For example, use a teaspoon to scoop the exact same amount of each ingredient or dissolve each ingredient in tap water.

5. List the variables. What is out of our control? Which ingredients have you chosen to dissolve? What makes each ingredient the same or different from each other? What are some of the characteristics of each ingredient?

6. Watch how each powder dissolves.

7. Record the results in a notebook. Your child will likely note that sugar and salt dissolve, while the flour will partially dissolve, and the baby powder will remain whole. The grainy crystals of the sugar and salt are easily dissolved in water, but the dry, powdery substances are likely to clump up or remain at the bottom of the jar.

8. Think about what you saw and draw a conclusion. Make sure to connect it to your hypothesis. Did what you saw support your hypothesis? Did anything surprise you? What do you know now that you've done the experiment that you didn't know before? What will you try differently next time? What if you changed a control into a variable?

9. Draw or illustrate the steps of your experiment and label it. Older kids might try to record their data as a bar or line graph.



REFLECTING AND SHARING ABOUT WHAT YOU'VE READ: **MAKING A KNOWLEDGE TREE**

Sharing our reflections with others helps give what we learned new and deeper meaning and invites more discussion outside our immediate family groups. This helps connect what we have read and discussed to our own life. In addition to reflecting on the book itself, consider reflecting on your experience reading it and using this reading kit. Reflecting on what you liked and didn't like about this experience can help understand how everyone in your family likes to read and learn, which may influence the way you read your next book together!

Consider asking yourself:

- What worked best for me when I used the Family Reading Kit and read the book?
- What didn't work so well?
- What's next? What would I do differently or the same?

ACTIVITY ---

Scientists rarely work alone! They learn not just from reading, research, and experimenting but from the people around them and from other past and present scientists. Ada learns a lot of what she knows about the world from her family who help her, and they have learned a lot from Ada too.

This is an activity where you and your child can reflect on who has helped you in your journey to understanding the world and who you have helped to learn and grow. Make a tree with leaves for things you have learned and apples for things you have taught other people.

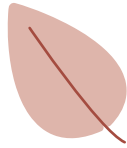
MATERIALS REQUIRED:

- A big piece of paper to draw a tree
- Paper to draw and cut out leaves and apples. You may choose green paper for leaves and red for apples.
- Scissors
- Something to write with
- Glue, tape, or a stapler
- Optional: Crayon, markers, glitter stickers or whatever you would like to help you decorate your tree, leaves, and apples

INSTRUCTIONS:

1. Draw a big tree with many branches on your big piece of paper.
2. Draw and / or cut out several leaf and apple shapes to add to your tree.
3. Write down things you have learned and who you learned them from on your leaves. If you learned one thing or skill from more than one person, feel free to make a leaf for each of them (i.e. my mom, my dad, and my teacher all showed me how to tie my shoes, so you would make three leaves, one for each person).
 - You can ask the person who taught you who they learned from and you can make a leaf for that person, too (i.e. my brother taught me to dribble a basketball and he learned it from his gym teacher. You can make a leaf for your brother and his gym teacher).
 - You could also keep some leaves with you and throughout the day write down anything new that you learn. Remember to write down who you learned from.
4. Write down things you have taught other people on the apples.
 - Be curious and ask! You might not know how much people learn from you every day.
 - Use the questions provided to get started if you need to.
 - Feel free to take apples with you during your day and write down things you teach or share with other people when it happens.
5. Glue, tape, or staple your leaves and apples to your tree until it looks the way you want and consider how connected you are to others by learning.





QUESTIONS TO HELP KIDS GET STARTED WITH LEAVES. ASK:

- Who taught you how to tie a shoe? Who did they learn it from?
- Did you go to school today? Did you learn anything new from a teacher?
- Have you seen any friends recently? Did they share anything with you about themselves, a show they watch, or a sport they play?
- Have you ever helped cook or get groceries with an adult? What did they tell you? Did you learn a good way to help?
- Can you think of a time when you asked a basic question like "Where is that smell coming from?" Did someone tell you an answer? Who?

Write your own ideas for questions about things you have learned and who you have learned them from below.

QUESTIONS TO HELP KIDS GET STARTED WITH APPLES. ASK:

- Do you think you have ever taught the adults in your life something? What have you taught me?
- Do you think your friends or siblings have learned things from you or about you?
- Have you ever read with a younger person or held a baby? What do you think they might learn about their world from you?
- Have you ever taught a trick to or helped take care of a pet? What do you think they learned from you?

Write your own ideas for questions about things you have taught other people below.

ADDITIONAL RESOURCES

CALGARY PUBLIC LIBRARY DIGITAL LIBRARY eRESOURCES:

Access these resources and more for free with your Library card! Need help? Contact the Library at 403.260.2600.

World Book Online for Kids

Learn more about almost any topic you can think of with World Book Online for Kids! This amazing resource is like an interactive encyclopedia with articles, pictures, and videos on many topics. There is an option to have the articles read out loud, which is a big help to many readers. You can search any topic you want or press explore to see suggestions.

calgarylibrary.ca/world-book-online-for-kids

TumbleBook Library

Listen and read along to animated story books for young children, parents, and teachers. Play games and watch videos from National Geographic. Includes a selection of French picture books.

calgarylibrary.ca/tumblebook-library

Science Reference Centre

The Science Reference Centre has information about famous scientists and research topics in applied sciences, biology, chemistry, earth science, energy, and astronomy in journal articles, eBooks, and images. Find information about scientists Ada Lovelace and Marie Curie, who Ada Marie Twist is named after. Recommended for elementary kids with some adult help.

calgarylibrary.ca/science-reference-centre

EXTERNAL RESOURCES:

Ada is part of a whole series of books with characters collectively known as the Questioneers. Find more activities involving this book series and characters with downloadable puzzles and worksheets at calgarylibrary.ca/questioneers

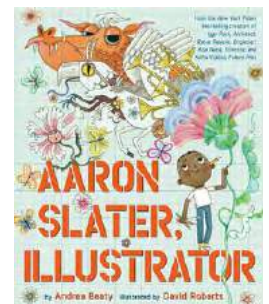
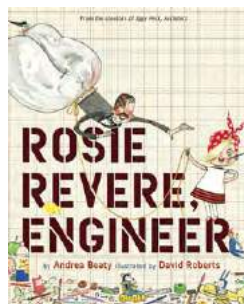
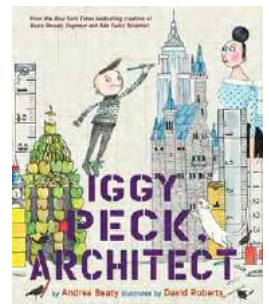
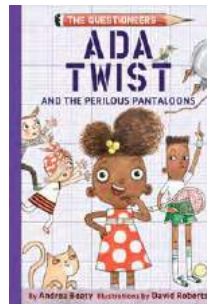
Check out real-life astronauts reading some of your favorite stories from the International Space Station, including *Ada Twist, Scientist*. calgarylibrary.ca/ada-twist

For families who subscribe to Netflix, *Ada Twist, Scientist* is now available as a TV series! The show celebrates STEAM (Science, Technology, Engineering, Art, and Math) education and scientific discovery, and each 26-minute episode ends with a live-action aspect that features an actual scientist.

BOOK RECOMMENDATIONS FROM LIBRARY STAFF

Read more from Andrea Beaty's Questioneers series by finding these books at your Library location or checking out our booklist at calgarylibrary.ca/questioneers-books:

- *Ada Twist and the Perilous Pants*
- *Iggy Peck, Architect*
- *Sofia Valdez, Future Prez*
- *Rosie Revere, Engineer*
- *Aaron Slater, Illustrator*

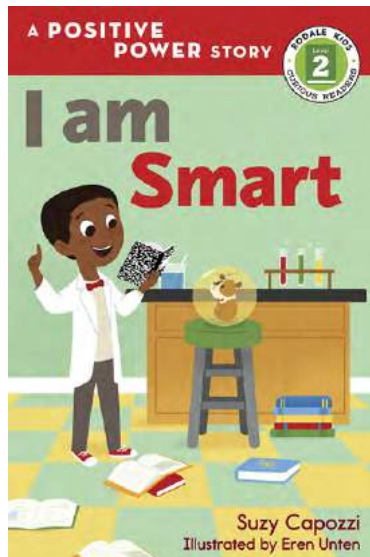
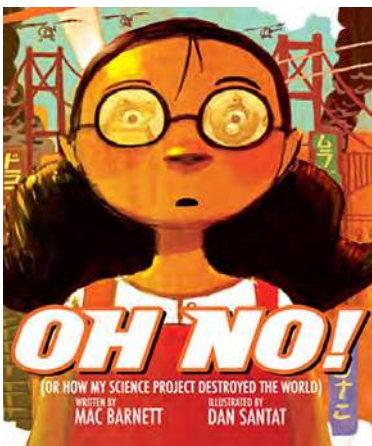
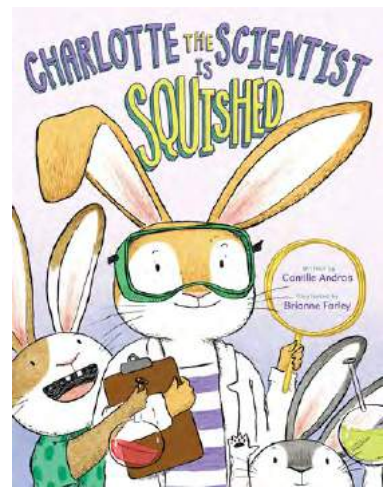
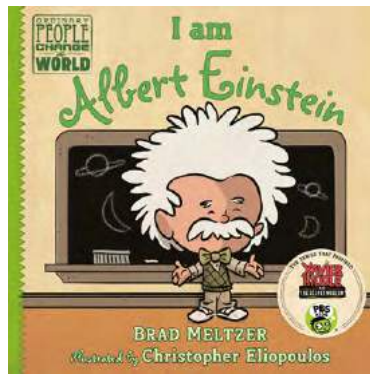
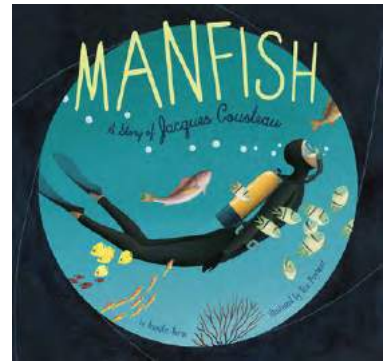
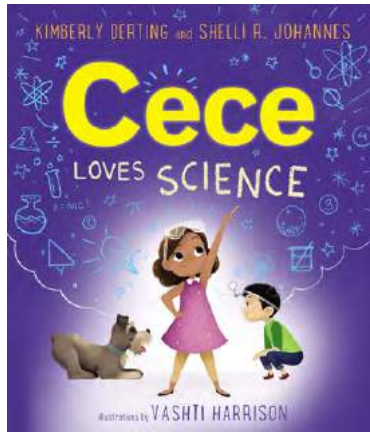
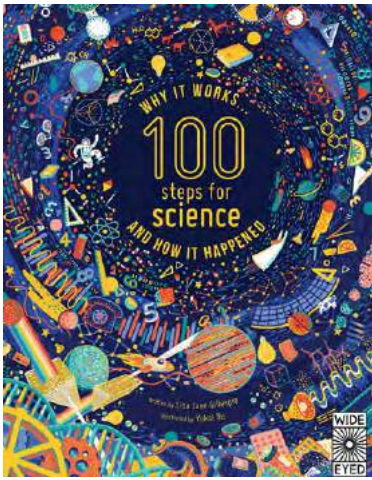


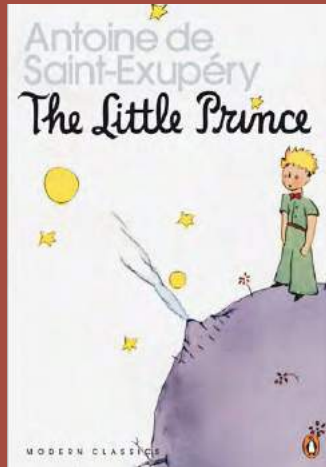
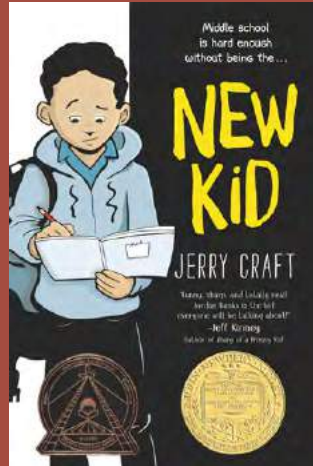
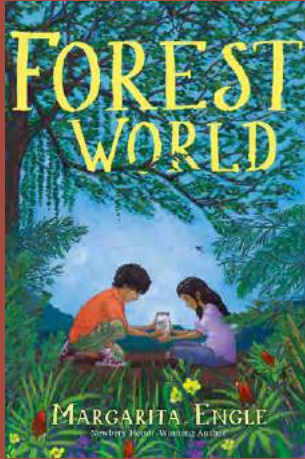
When Ada's family started helping her with her experiments, they began doing research by reading together. The books they read are either well-known scientific texts or cleverly made-up titles. Adults may be interested in reading these titles to learn more about famous scientists and their work. Find them at your Library location.

- *Silent Spring* by Rachel Carson
- *Cosmos* by Carl Sagan

If your family enjoyed *Ada Twist, Scientist* you'll want to check out these related titles at your Library location or in this booklist at calgarylibrary.ca/if-you-liked-ada-twist:

- *I Am Smart* by Suzy Capozzi
- *We Are Water Protectors* by Carole Lindstrom
- *Mae Among the Stars* by Roda Ahmed
- *Cece Loves Science* by Kimberly Derting and Shelli R. Johannes
- *Charlotte the Scientist is Squished* by Camile Andros
- *Oh No! Or, How My Science Project Destroyed the World* by Mac Barnett
- *I Am Albert Einstein* by Brad Meltzer
- *Ada Twist's Big Project Book for Stellar Scientists* by Andrea Beaty
- *Little People, Big Dreams: Ada Lovelace* by Ma Isabel Sanchez Vegara
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- *Kid Innovators: True Tales of Childhood From Inventors and Trailblazers* by Robin Stevenson
- *STEAM Lab for Kids* by Liz Lee Heinecke
- *10-Minute Science Experiments* by Steve Spangler
- *101 Great Science Experiments* by Neil Ardley
- *100 Steps for Science: Why It Works and How It Happened* by Lisa Jane Gillespie
- *Manfish: the Story of Jacques Cousteau* by Jennifer Berne
- *Joan Procter, Dragon Doctor* by Patricia Valdez





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