Kagan and Soai win Chemistry Nobel

LEVEL B1



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I. WARM-UP

1. What science topics are you most interested in?
2. Have you heard of the Nobel Prize? What do you know about it?
3. Why might mirror images ever matter in real life?

II. KEY VOCABULARY

chirality
A property where a molecule has left- and right-handed forms that are mirror images.

molecule
A very small unit of a substance made of two or more atoms joined together.

mirror image
Something that looks the same in reverse, like your left and right hands.

amino acid
A small chemical that is a building block of proteins in living things.

reaction
A process where substances change into new substances in chemistry.

prescribe
To officially say a patient should take a medicine.

toxic
Poisonous or harmful to living things.

disability
A physical or mental condition that limits activities or movements.

III. READING

The Nobel Prize in Chemistry has been awarded to Henri B. Kagan and Kenso Soai. They were honoured for explaining why life on Earth uses only one of the two mirror-image forms of many molecules. In chemistry this property is called chirality.

Amino acids, the building blocks of proteins, come as two mirror images, like left and right hands. Nature favours just one version. In a laboratory, however, a typical reaction makes a 50–50 mix, which can be a problem for drugs.

The laureates showed how to design reactions that produce far more of the desired version. This helps chemists make safer, more effective medicines. In the 1950s the drug thalidomide was prescribed for morning sickness. One version worked, but the other was toxic, and many children were born with severe disabilities.

Kagan reported a key method in 1986, and Soai later demonstrated a reaction that made only one mirror image. Their work also offers clues to how life's asymmetry began.

Reading text adapted from reporting by **BBC News***: "Chemistry Nobel awarded for solving mystery of...". Original article linked at theenglishwire.com.*

IV. COMPREHENSION QUESTIONS

1. Who won this year's Nobel Prize in Chemistry?
2. What everyday example does the text use to explain chirality?
3. Why can a 50–50 lab mix be a problem for drugs?
4. Which 1950s medicine is given as a warning example?
5. What did Soai later show a reaction could do?

V. DISCUSSION

1. Why does chirality matter for medicines, in your view?
2. How could this research help patients in the future?
3. Is basic research valuable even without quick results? Why?
4. What other left/right examples in nature can you think of?

VI. GRAMMAR FOCUS

Second conditional

We use the second conditional for unreal or unlikely situations now or in the future. Form: If + past simple, would + base verb (be → were in formal English).

> *"If every reaction made only the desired version, drugs* **would work** *better."*
>
> *"If teams controlled chirality, chemists* **would make** *purer medicines."*

VII. GRAMMAR EXERCISE

Complete each sentence with would + base verb (second conditional).

1. If I were a chemist, I (study) ___ mirror-image molecules. _____
2. If one form were toxic, it (harm) ___ patients. _____
3. If nature used both hands, evolution (take) ___ longer. _____
4. If a Nobel winner visited us, we (ask) ___ many questions. _____
5. If regulators checked chirality, medicines (become) ___ safer. _____

Teacher's Notes

TEACHERS ONLY

These notes are designed to help you get the most out of this lesson. Please do not share this page with students.



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I. LESSON GUIDE

- Timing: 8–10 minutes warm-up, 10 minutes vocabulary, 12–15 minutes reading and comprehension together, 8–10 minutes grammar, 10–12 minutes discussion.
- Pre-teach or check: chirality, mirror image, amino acid, reaction, toxic. Write thalidomide on the board and model its pronunciation.
- Run the reading in two passes: gist first (Who, what, why), then details (examples, dates). The text mentions children born with severe disabilities; start the discussion in pairs and allow students to speak about the news rather than personal experiences.
- Differentiate: stronger students summarise the thalidomide case in two sentences; others underline sentences that explain chirality and paraphrase them with the hand example.

II. DISCUSSION FACILITATION TIPS

1. Invite brief definitions first, then ask for one concrete medicine example from any student.
2. Elicit two or three future benefits, then push for how each benefit would reach patients.
3. Take a show of hands, then pair students with an opposite view and ask for one reason each.
4. Have students list quick examples alone for 30 seconds, then compare in small groups.

III. EXTENSION ACTIVITIES

Writing: In pairs, write a 70-word news brief announcing the award and why chirality matters.

Presentation: In groups of three, make a 2-minute poster talk explaining chirality with the hand example.

IV. ANSWER KEY OVERVIEW

Comprehension questions: short factual answers from the text.

Grammar exercise: Second conditional

Discussion: open-ended. Accept any reasonable ideas supported by examples and reasoning.

Answer Key

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IV. COMPREHENSION QUESTIONS

1. Who won this year's Nobel Prize in Chemistry?
   Henri B. Kagan and Kenso Soai.
2. What everyday example does the text use to explain chirality?
   Left and right hands as mirror images.
3. Why can a 50–50 lab mix be a problem for drugs?
   It may include the wrong version, which could be harmful or useless.
4. Which 1950s medicine is given as a warning example?
   Thalidomide.
5. What did Soai later show a reaction could do?
   Make only one of the two mirror-image versions.

V. DISCUSSION

Open answers. Accept any reasonable ideas supported by examples and reasoning.

VI. GRAMMAR FOCUS

Key point: We use the second conditional for unreal or unlikely situations now or in the future. Form: If + past simple, would + base verb (be → were in formal English). (Examples constructed.)

> *"If every reaction made only the desired version, drugs* **would work** *better."*
>
> *"If teams controlled chirality, chemists* **would make** *purer medicines."*

VII. GRAMMAR EXERCISE

Complete each sentence with would + base verb (second conditional).

1. If I were a chemist, I ___ mirror-image molecules. **would study**
2. If one form were toxic, it ___ patients. **would harm**
3. If nature used both hands, evolution ___ longer. **would take**
4. If a Nobel winner visited us, we ___ many questions. **would ask**
5. If regulators checked chirality, medicines ___ safer. **would become**