



no. 8

July 27, 2012

Catalyzer

44th International Chemistry Olympiad United States of America

Baltimore Aquarium, Maryland Science Center and Orioles Baseball

In 2003, separate aquariums in Baltimore, MD, and Washington, D.C., joined as one "National Aquarium." **The National Aquarium** holds living collections that include more than 16,000 animals from more than 660 species of fish, birds, amphibians, reptiles, and mammals living in award-winning, naturalistic habitats.

The **Maryland Science Center** in Baltimore is visited by more than 500,000 people each year. Popular exhibits include: Dinosaur Mysteries with full-size dinosaurs and interactive paleontology activities; a day in the life of the human body in Your Body: The Inside Story; and dozens of interactive experiments in Newton's Alley. Other attractions include a five-story IMAX Theater, and the world-famous Davis Planetarium.

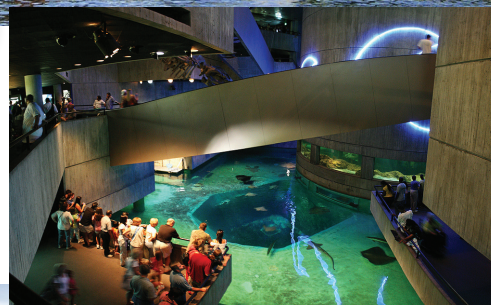
The **Baltimore Orioles** are a baseball team that is part of Major League Baseball, the top level of professional baseball in the USA. The Orioles (sometimes called the O's for short) have been in the American League since 1901. The Orioles won three World Series Championships (1966, 1970 and 1983). They play in the trend-setting Oriole Park at Camden Yards.



Maryland Science Center



Below: Tall ships anchored in Baltimore Harbor. Above: The Maryland Science Center. Right: Inside the Baltimore Aquarium. Bottom right: Fans in Orioles Baseball Stadium.



Baltimore convention and Tourism



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Celebrating International Excellence in Chemistry

Percy L. Julian's Lifetime of Accomplishments

In a lifetime of continual striving, **Percy L. Julian** succeeded against the prejudices and discrimination of his time to become a prominent and successful medicinal chemist who made great contributions to chemical synthesis throughout his career.

Julian became a world renowned chemist at the age of 36 through his pathbreaking research on physostigmine. The drug, previously found only in its natural source, is a treatment for glaucoma, a disorder of the eye which damages the optic nerve and often leads to a loss of vision and even blindness. Julian's team of researchers succeeded in synthesizing physostigmine in 1935, a development that made glaucoma treatment widely available.

More than 75 years later, the synthesis of physostigmine remains relevant as derivatives and optically pure forms of the drug have shown therapeutic promise for the treatment of Alzheimer's and

for combating the effects of chemical weapons.

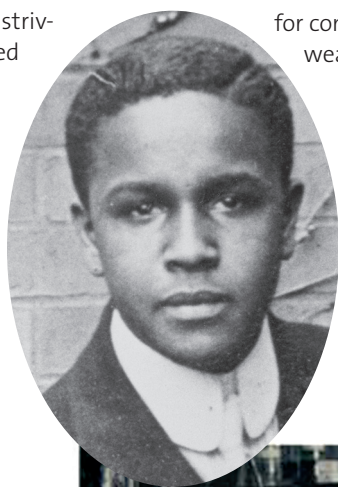
Julian continued to make important contributions to the field of medicinal chemistry throughout his career.

His 1948 synthesis of Reichstein's Substance S is still the most widely used route to the production of hydrocortisone and its derivatives,

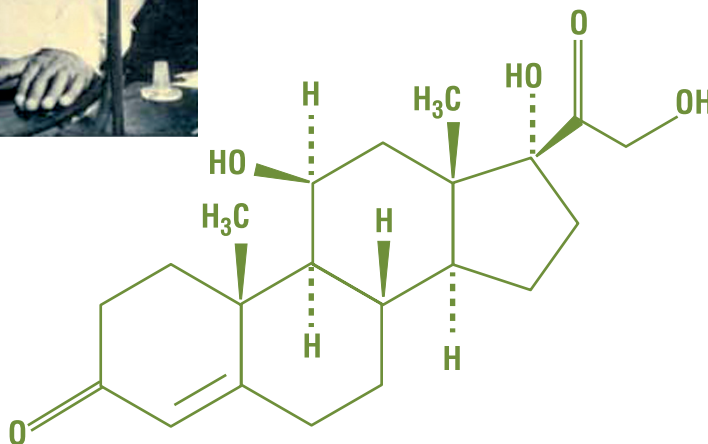
which are used in the treatment of rheumatoid arthritis. He developed efficient syntheses for whole families of steroids, including progesterone and testosterone.

Julian died in 1975 after a lifetime of accomplishments. Among his many honors was election, in 1973, to the National Academy of Sciences. He received more than 130 chemical patents. He was also recognized as a steadfast advocate for human rights.

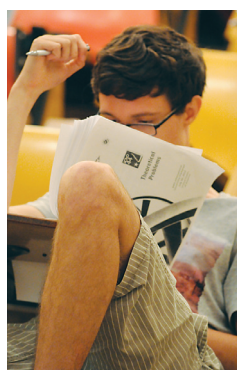
Julian's synthesis of physostigmine was designated a National Historic Chemical Landmark at DePauw University in Greencastle, Indiana, in 1999. To date, more than 65 achievements in chemical science and technology in the U.S. and abroad have been recognized by the program. For more information, visit www.acs.org/landmarks.



Top left: Percy Julian as a young man in 1918 at DePauw University. Center: Percy Julian in the laboratory. Bottom left: In 1993 the U.S. Postal Service issued a commemorative stamp in his honor. Below: chemical structure of hydrocortisone.



Photos from the Theoretical Exam



Photos by Michael Tinnasand and Peter Cutts Photography

Cell Structure Puzzle Answers

ACROSS: 4. Ribosomes 5. Cytoplasm 7. Cell wall
8. Vacuoles DOWN: 1. Endoplasmic reticulum 2. Mitochondria 3. Nucleus 6. Chloroplasts

Friday, July 27 Schedule

	Students	Mentors and Observers
morning	Baltimore Harbor Camden Yards Baseball Game	Score Marking
afternoon		Free Time
night		3rd Jury Meeting

*Imagination is more important
than knowledge.*

-Einstein

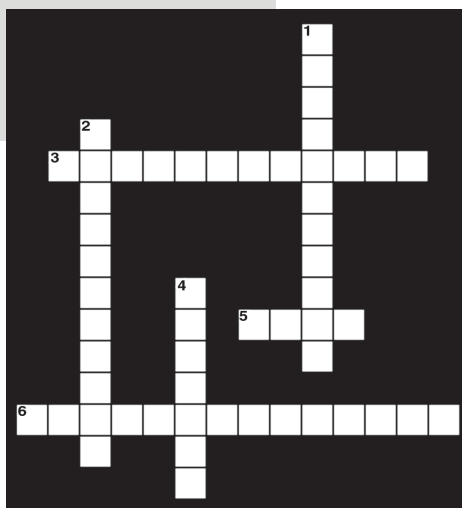
Puzzle Life Science

Across

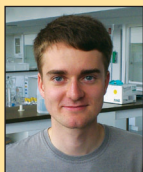
- A thin layer covering the outside of cells (*two words*).
- A kind of fungus.
- A process in plants that uses carbon dioxide, water and sunlight to make sugar, oxygen and energy.

Down

- The green coloring that plants use in photosynthesis.
- A reaction in living things that turns sugar and oxygen into carbon dioxide, energy and water.
- The movement of water from an area with lots of water into an area with less water.



Answers are in issue #9.



Frederik Soendergaard-
Pedersen, Denmark,
July 27

**HAPPY
BIRTHDAY!**



On the cover masthead: Baseball, known since the 1850s as the 'national pastime', is one of the U.S.'s favorite summer sports.



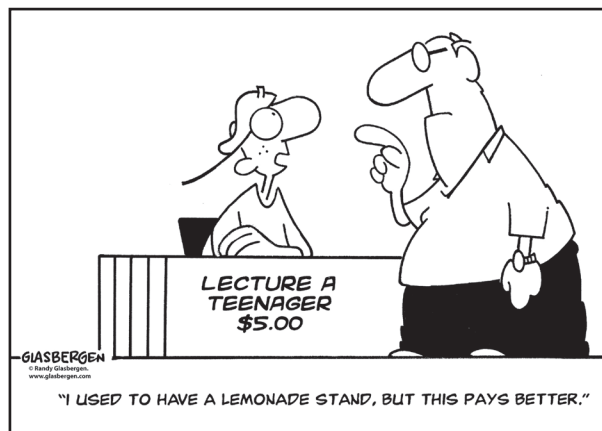
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Weather Today
Isolated T-Storms
96 °F (35 °C)

Weather Tomorrow
Isolated T-Storms
93 °F (33 °C)



3000 B.C., CHINA

One of the earliest recorded **eye drops**, made from an extract of mahuang plant, was prepared in China five thousand years ago. Today ophthalmologists know that the active ingredient was ephedrine hydrochloride, which is still used to treat minor irritations especially eyes swollen by allergic reactions.

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