

DO BIRDS HAVE THUMBS?



Biologists have been trying to fathom (推測) whether the innermost digit (足趾) of a bird's three-pronged wing acts like a thumb or an index finger (食指).

It is the kind of question that keeps biologists up at night: from an evolutionary (進化的) standpoint, is the innermost digit of a bird's three-pronged wing more like a thumb or an index finger?

A study published online Sunday by *Nature* says it's a bit of both.

The stem cells in birds that normally produce the first digit die off during early stages of embryonic (胎兒的) development, it found, while cells programmed to manufacture the index unit give rise instead to a thumb-like appendage (附屬肢體).

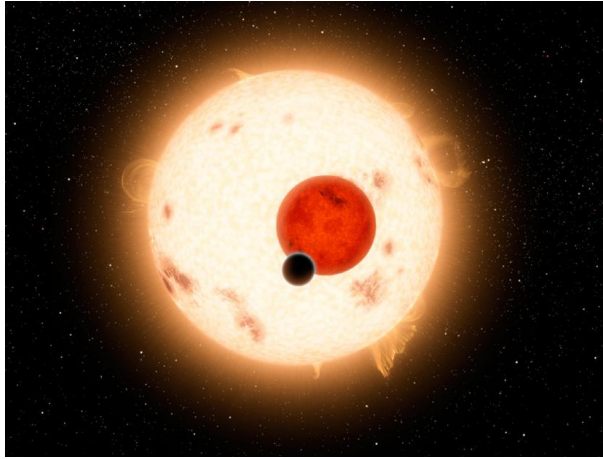
Member No. 2, in other words, has undergone a shift (轉變) in digital identity.

All four-legged animals with backbones – vertebrates (脊椎動物) -- share an ancient template (樣板) of five digits per limb. But that has not kept evolution from generating a numerically diverse menagerie (野生動物) for grasping, clawing and walking.

Human and primate hands and feet normally have five fingers or toes (腳趾) each; birds have three in their wings and two, three or four digits on their feet; two-toed sloths speak for themselves.

Snakes shed their limbs entirely, while Pandas have five clawed (爪) fingers and a sixth big toe-like appendage, the better to grasp bamboo stalks (高視闊步) while dining.

WEIRD EXOPLANET DISCOVERED ORBITING TWO STARS



For the first time, an alien world has been discovered beyond the solar system circling two married stars

If you could stand on the surface of Kepler-16b, you'd have two shadows. At sunset, you would see an orange star about the size of the sun and next to it a much fainter red star. As the stars slipped toward the horizon, they would change places in the sky, like partners in a square dance.

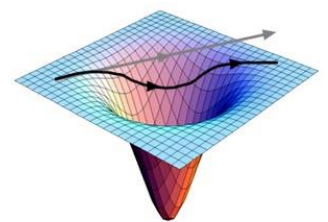
You would not need to be Luke Skywalker visiting his home planet of Tatooine in the movie "Star Wars" to watch the twin sunset. The only science fiction in this story is how to make the 200 light-year journey to Kepler-16, a binary star system jointly sharing the Saturn-sized planet, Kepler-16b.

重力透鏡

日常生活之中，我們一向都認為，光線是走直線的，只有光線在反射、折射、或衍射時才會改變傳播方向。但是根據廣義相對論，在巨大的引力場附近就連時間和空間也會被扭曲，使光沿曲線運動！甚麼叫「空間扭曲」呢？讓我們先來考慮一張橡皮，並且想像這張橡皮薄得幾乎完全沒有厚度，橡皮上有一個「平面人」，他是二維空間的生物，它生活在橡皮上，只知道有長度和闊度，卻不知道何謂高度，三維空間對他來說是無法想像的。我們是活在三維空間的立體人，這時如果我們把一個重物放在橡皮之上，把橡皮弄彎了，「平面人」可能不會感受到有任何異樣，但當他在重物旁邊射出一束光線的時候，他便會發現，光線的路徑彎曲了！愛因斯坦的解釋是：巨大的質量產生引力，使時空扭曲，光線在彎曲了的時空運動，改變了方向！

「平面人」無法想像三維空間，我們也無法想像四維空間。就好像「平面人」感受不到橡皮彎曲一樣，我們也感受不到三維空間的彎曲。引力使時空扭曲不是天方夜譚，而是有科學觀測支持的。天文學家利用了日全蝕時太陽光轉暗的機會，去觀測十分接近太陽的背景星空，發現了星星的位置有細微的改變，就連數值都與廣義相對論的預測十分吻合。

這裡所說的「平面人」只是一個比喻而已，相對論所論述的時空幾何涉還及時間的彎曲，需要應用較高深的數學才可精確地描述。



LUNCH TIME VIDEO SHOW: OCT 2011 天際之旅

(12:20P.M.)@CHEM LAB RM512

Date	Name of Program	Language / Subtitle	Area
4/10 (Tue)	A Traveler's Guide To The Planets: Uranus and Neptune 行星旅遊指南：天王星和海王星 (Part I)	English / Chinese	Astronomy 天文學
7/10 (Fri)	A Traveler's Guide To The Planets: Uranus and Neptune 行星旅遊指南：天王星和海王星 (Part II)	English / Chinese	Astronomy 天文學
18/10 (Tue)	A Traveler's Guide to The Planets: Venus and Mercury 行星旅遊指南：金星與水星 (Part I)	English / Chinese	Astronomy 天文學
21/10 (Fri)	A Traveler's Guide to The Planets: Venus and Mercury 行星旅遊指南：金星與水星 (Part II)	English / Chinese	Astronomy 天文學
25/10 (Tue)	A Traveler's Guide To The Planets: Pluto 行星旅遊指南：冥王星 (Part I)	English / Chinese	Astronomy 天文學
28/10 (Fri)	A Traveler's Guide To The Planets: Pluto 行星旅遊指南：冥王星 (Part II)	English / Chinese	Astronomy 天文學

科普講座名稱	日期	時間	地點	講員
核能知多少	10月22日 (星期六)	9:30-11:00a.m.	新一代科學創意中心	大亞灣核電有限公司維修部副經理 梁肇栢先生
法醫學與鑑證	10月29日 (星期六)			香港齒科法醫小組 梁家駒醫生

活動名稱	日期	時間	地點
星河傳說	9月1日至10月31日 (逢星期六)	下午二時四十分 (41分鐘)	何鴻燊天象廳(香港太空館)
鐵鳥夢飛翔		下午三時五十分 (42分鐘)	
古海龍王		下午一時三十分 (41分鐘)	

SCIENCE SOCIETY 2011-12

Chairperson: Mak Shun Ki 麥順淇 4E

Committee Member: Lau Wai Nim 劉威念 4A, Lee Ka Hang 李嘉恒 4A, Tang Pui Kei 鄧珮琦 4A, Lam Ho Lim 林皓廉 4D, Wong Chun Fung 黃進鋒 4D, Chau Iris 周雅詩 4E & Chik Chung Yin 植頌然 4E

RELAX A MOMENT!

<p>Have you heard about "Funny Experiment"? It is a new scientific activity this year.</p>	<table border="1" style="width: 100%; text-align: center;"> <tr><td>8</td><td></td><td></td><td></td><td>9</td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td>6</td><td>5</td><td>3</td><td></td><td></td><td></td></tr> <tr><td></td><td>4</td><td>1</td><td></td><td></td><td></td><td>9</td><td>5</td></tr> <tr><td></td><td>8</td><td></td><td>2</td><td>7</td><td></td><td></td><td></td></tr> <tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td><td>7</td></tr> <tr><td></td><td></td><td></td><td></td><td>6</td><td>4</td><td></td><td>1</td></tr> <tr><td>2</td><td>7</td><td></td><td></td><td></td><td></td><td>4</td><td>6</td></tr> <tr><td></td><td></td><td></td><td>3</td><td></td><td>6</td><td>9</td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td>4</td><td></td><td></td><td>3</td></tr> </table>	8				9						6	5	3					4	1				9	5		8		2	7				9							7					6	4		1	2	7					4	6				3		6	9						4			3	<p>The 1st "Funny Experiment" will be held on 7th of October 4:15p.m. @ Chem Lab (Rm512).</p>
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<p>We will do many interesting and incredible experiments with the participants. Hope you can join us!</p>	<p>The answer of the Sudoku will be posted on the "Sound of Science" next month.</p>																																																																									

SCIENCE QUIZ(1/10-31/10)

Q1. Is the innermost digit of a bird's three-pronged wing more like a thumb or an index finger?

A. Thumb B. Index finger C. A bit of both D. I don't know

Q2. The stem cells in birds that normally produce the first digit die off during early stages of embryonic development. (T/F)

Q3. How many digits per limb of all four-legged animals with backbones – vertebrates have?

A. Three B. Four C. Five D. Six

Q4. 光線是走直線的。(T/F)

Q5. 當光線從三十億光年遠的外太空走到地球時，途中經過一個星系團，光線會被彎曲。(T/F)

You can use the answer sheet on the right to answer the question. Collection box is put on the notice board of Science Society near the Staff Common Room (Rm102). The students who answer all correct will be given a special gift. Everyone can submit one answer sheet only. Extra copy of "Sound of Science" can be found in library. Thanks for your participation!

Name: _____

Class: _____ (____)

1, _____

4, _____

2, _____

5, _____

3, _____

Hope you can find out the answers and know more about Science!