

# EXTINCTION · RESILIENCE

# 滅絕 · 新生

香港科學館 · 古生物展廳 HONG KONG SCIENCE MUSEUM · PALAEOLOGY GALLERY





想了解恐龍及更古老的史前生物？

從遠古的大滅絕事件到生物的絕地重生，

讓我們一起來探索生命的奇妙故事！

Curious to learn about dinosaurs and  
prehistoric creatures even older than them?

Let's explore the fascinating story of life -  
from prehistoric mass extinctions to the resurgence of life!

## 展覽簡介

### EXHIBITION BRIEF

展覽帶你體驗由六億三千五百萬年前埃迪卡拉紀以來，地球生命經歷過的各種挑戰及生命的演化。展覽中除了有疊層石、盾皮魚、原始植物等各個時期的珍貴化石外，亦有栩栩如生的機械恐龍和各種有趣的互動展品，介紹包括挖掘化石，史前的環境，以及物種的演化等知識，讓大家沉浸在古生物學的世界中，一嘗當中的樂趣！

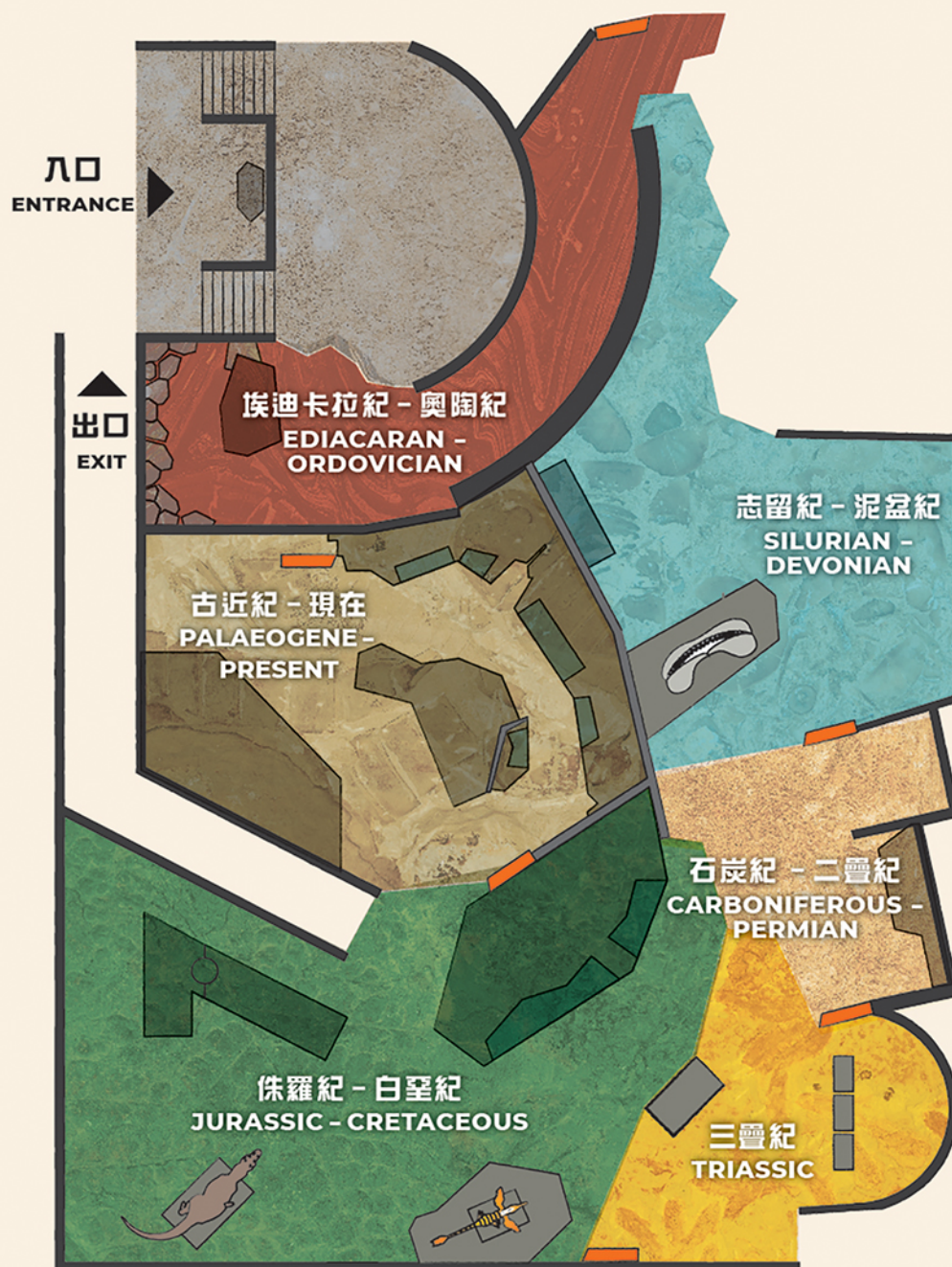
This exhibition will enable you to experience the challenges and evolution that life has gone through since the Ediacaran period 635 million years ago. Precious fossils of different periods including stromatolites, placoderms and primitive plants will be displayed in the exhibition. In addition, there are also lifelike robotic dinosaurs and interesting interactive exhibits that focus on fossil excavations, prehistoric environments, and the evolution of life to allow you to immerse yourself in the world of palaeontology and experience how fun it is!

## 甚麼是古生物學？

### WHAT IS PALAEOLOGY?

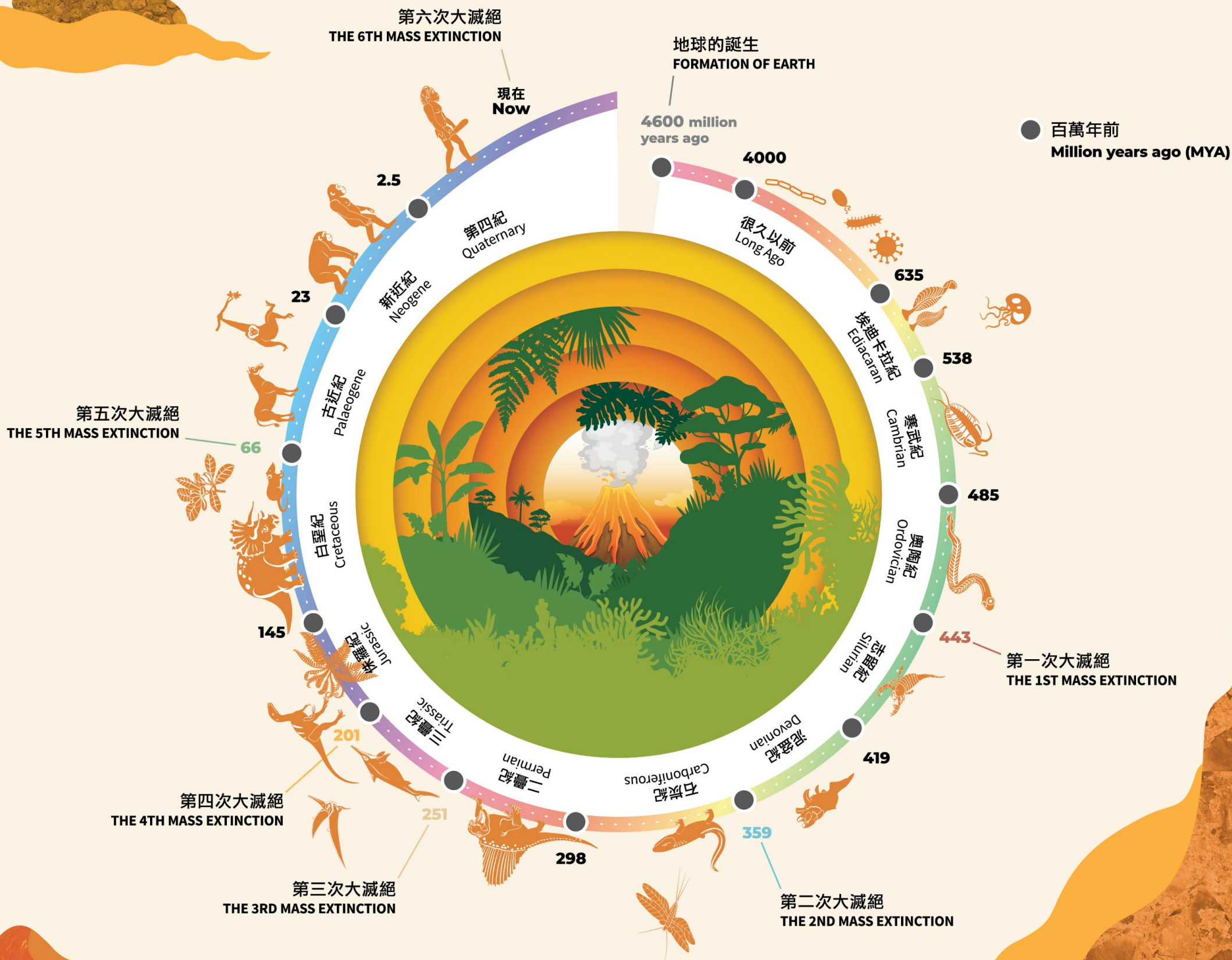
古生物學是一門跨學科的科學。它的研究對象為各種古代生物，包括微小的單細胞生物以至龐大的恐龍。除了生物學外，深入了解生態學、地球科學和電腦科學等知識，對我們重構整個古生態系統，及了解生物的演化都是必不可少的。

Palaeontology is an interdisciplinary field of science that studies all prehistoric organisms, from microscopic single-celled organisms to gigantic dinosaurs. It requires not only a deep understanding of biology, but also ecology, earth science, and computer science to reconstruct their ecosystems and gain insights on the evolution of life on Earth.

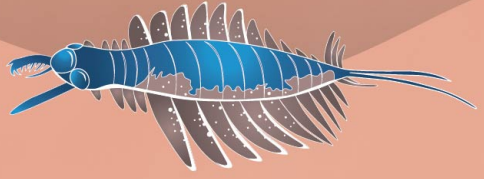




# 時間線 TIMELINE







## 埃迪卡拉紀 - 奧陶紀 EDIACARAN - ORDOVICIAN

6.35-4.43 億年前 | 635-443 MYA



這時候的海洋比今天溫暖，生命以軟體生物為主。複雜的動物在「寒武紀大爆發」中崛起，例如原始海洋節肢動物，和跟魚類相像的早期脊索動物就是在大爆發中相繼出現的，牠們為未來更複雜的生命形態奠定了基礎。

Oceans during those times were warmer and soft-bodied organisms were the major life form. The rise of complex animals during the “Cambrian explosion”, such as primitive marine arthropods and fish-like creatures with the first sign of a backbone, paved the way for more intricate life forms in the future.

### 遠古海洋

#### THE PREHISTORIC OCEANS

脊椎動物的祖先就在這時首次出現，一起潛入這些古老的海洋，認識地球上最早的動物吧！

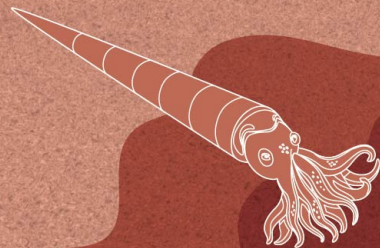
The ancestors of vertebrates first appeared at this time. Let's take a deep dive into those ancient oceans to meet the earliest animals on Earth!



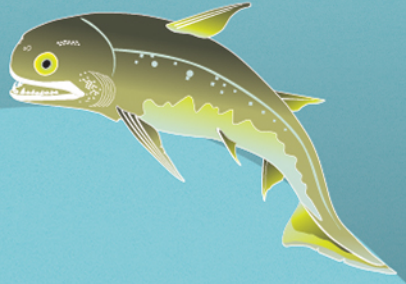
### 第一次大滅絕 1ST MASS EXTINCTION 4.43 億年前 | 443 MYA

冰河時期  
Ice Age

85% 生物絕跡  
Wiped out 85% of life







## 志留紀 - 泥盆紀 SILURIAN - DEVONIAN

4.43 - 3.59 億年前 | 443 - 359 MYA



第一次大滅絕結束後，氣候開始回暖，這個時期以魚類的快速演化和多樣化聞名。第一批有領魚類和四足動物亦是在這時出現，而在陸地上則出現了最早的維管植物。

Following the 1st mass extinction, the climate became warm and was marked by the rapid evolution and diversification of fish. It was the first time that the first jawed fishes and tetrapods emerged. On land, the first vascular plants made their debut.

### 海中巨顎 THE JAWS

魚類是第一種演化出下頷的脊椎動物，某些更藉此變成兇猛的捕食者，稱霸不同時期的海洋。

Fishes were the first vertebrates to evolve jaws, some of which even transformed into powerful predators to rule the oceans during different periods.



## 第二次大滅絕 2ND MASS EXTINCTION 3.80 - 3.59 億年前 | 380 - 359 MYA



急速的全球暖化和寒化  
Rapid warming & cooling

大量海洋生物滅絕  
Eliminated many marine species





## 石炭紀 - 二疊紀

### CARBONIFEROUS - PERMIAN

3.59 - 2.51 億年前 | 359 - 251 MYA

石炭紀和二疊紀期間氣候溫暖潮濕，陸地被茂密的沼澤森林覆蓋。脊椎動物正是在這種環境中，開始離開海洋，向陸地進發。

During the Carboniferous and Permian periods, the climate was warm and humid, giving rise to lush, swampy forests. It was within this environment that vertebrates started to venture from the ocean onto land.

#### 森林搜索隊

##### PALAEO-RANGER

石炭紀和二疊紀時期出現了第一批羊膜動物，快來探索史前森林，尋找我們的遠房祖先吧！

The Carboniferous and Permian periods saw the emergence of the first amniotes. Let's explore the prehistoric forests to find our distant ancestors!



## 第三次大滅絕 3RD MASS EXTINCTION

2.51 億年前 | 251 MYA

機制不明  
Unknown mechanism

90% 物種消失  
Wiped out 90% of species





## 三疊紀 TRIASSIC

2.51-2.01 億年前 | 251-201 MYA



經歷了史上最毀滅性的生物滅絕後，地球迎向炎熱的三疊紀。脊椎動物大概用了三千萬年才從「大死亡」中完全恢復過來。在三疊紀晚期，新的生命形態開始出現於海洋、陸地和空中，當中包括最早期的哺乳類動物、恐龍和翼龍。

Following the most devastating mass extinction, the Earth entered the hot Triassic period. Vertebrates took about 30 million years to recover from the "Great Dying". By the late Triassic, new life forms emerged in oceans, on land and in the skies, including the first mammals, dinosaurs and pterosaurs.



### 三疊紀大「捕」走 TRIASSIC TREKKER

三疊紀多元化的棲息地孕育出各有特色的植物和動物群，一起在這時的水中、陸地和天空探索吧！

The Triassic period had a rich variety of habitats that nourished unique communities of flora and fauna. From aquatic to terrestrial and aerial environments, there is much to explore!

## 第四次大滅絕 4TH MASS EXTINCTION 2.01 億年前 | 201 MYA



頻繁的火山活動和海平面下降  
Increased volcanic activity & lowered sea levels

大量海洋生物滅絕  
Eliminated many marine species





## 侏羅紀 - 白堊紀

## JURASSIC - CRETACEOUS

2.01 億年 - 6.6 千萬年前 | 201 - 66 MYA

這時的氣候大致溫暖濕潤，茂密的熱帶森林覆蓋了大部分土地。這些條件為各種植物和恐龍提供了合適的棲息地。已知最早的開花植物和最早由有羽毛恐龍進化而來的鳥類，就是在這段時間開始出現。

In general, the climate was warm and humid, with lush tropical forests covering much of the land. These conditions provided an ideal habitat for a diverse range of plants and dinosaurs, witnessing the emergence of the earliest flowers and the evolution of feathered dinosaurs into the first birds.



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Courtesy of Vegasoul Capital Management (Asia) Limited

### 恐爪龍

#### DEINONYCHUS ANTIRRHOPUS

恐爪龍是一種敏捷和視力出眾的恐龍，牠的腳上有鋒利的鐮刀狀腳爪，可以對獵物進行致命的踢擊。

*Deinonychus* was a swift dinosaur with excellent eyesight and a sharp sickle-shaped claw on its foot, which it could have used to deliver deadly kicks to its prey.

### 機械恐龍

#### ANIMATRONIC DINOSAURS

這是「恐龍時代」，牠們部分在此時演出龐大的體型、強壯的四肢和強大的咬合力，使牠們能夠勝過陸地上的其他動物，並成為地上的霸主。

It was "The Age of Dinosaurs". Some of the dinosaurs evolved into large sizes, with powerful limbs, and strong bites during this time, out-competing other terrestrial animals and establishing themselves as the dominant rulers of the land.



### 第五次大滅絕

#### 5TH MASS EXTINCTION

6.6 千萬年前 | 66 MYA

小行星撞擊地球  
An asteroid impact

> 50% 物種消失  
Wiped out > 50% of species





## 古近紀 - 現在 PALAEOGENE - PRESENT

6.6 千萬年前到現在 | 66 MYA until now

第五次生物大滅絕標誌着中生代的結束和新生代的開始。新生代的氣候多變，冷暖交替。非鳥翼類恐龍的滅絕讓哺乳動物得以興盛，其中包括首批靈長類動物，而人類便是由這些原始靈長類演化而來。

The 5th mass extinction ended the Mesozoic era and ushered in the Cenozoic era, recognised by fluctuating temperatures. As the non-avian dinosaurs were gone, mammals rose to dominance. This included the first primates, which eventually led to the evolution of humans.



## 被石化的樹木 THE FOSSILISED TREES

開花植物在新生代時期的分布變得更廣。展覽中的龍腦香木化石便是這個大家庭中的一員。

Throughout the Cenozoic era, flowering plants became increasingly prevalent. The *Dryobalanoxylon* displayed as fossils were among the many members of this diverse group.



由華懋集團位於荃灣的如心園借出  
Courtesy of Chinachem Group's Nina Park in Tsuen Wan

## 第六次大滅絕 6TH MASS EXTINCTION 正在進行中 | On its way

人類活動  
Human activities

每年數以百計的物種消失  
Losing hundreds of species every year







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