

A travelling exhibition by the Australian Museum

# TYRANNOSAURS

MEET THE FAMILY





photo © James Horan



## AUSTRALIAN MUSEUM

The Australian Museum is a leading cultural attraction located in the heart of Sydney's central business district.

Founded in 1827, it's Australia's first museum, inspiring generations of visitors to explore nature and culture and offering a diverse array of public programs for all ages. It hosts everything from world-class exhibitions and ever-changing special displays to dynamic events and innovative learning services.

The Museum also houses the largest natural science and cultural collection in Australia – with more than 18 million objects representing the environmental and cultural histories of the Australian and Pacific regions.

The Museum has a long history of developing and producing permanent, temporary and travelling exhibitions, including international blockbusters such as *Spiders - Life & Death*.

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### OUR EXHIBITIONS ARE BUILT ON

- Rigorous, contemporary science
  - Localised content
  - Engaging and interactive multimedia
  - Quality and innovation
-



**IF YOU THINK YOU KNOW T. REX THEN THINK AGAIN**

## OVERVIEW

This exhibition brings the latest tyrannosaur discoveries to life, overturning our preconceptions about these ferocious predators.

While the most famous is the mighty *T. rex*, tyrannosaurs came in all shapes and sizes and from all over the globe, and their history goes back over 100 million years. New tyrannosaurs, like the crested *Guanlong* from China, are changing and challenging our understanding of the evolution of these iconic, well-loved dinosaurs.



Explore the diversity of tyrannosaur skulls and discover how differences in structures can reveal different hunting or feeding strategies.



**SCOPE**



The skeletons are brought to life through computer generated image (CGI) animations presented in digital label screens.



This interactive touchscreen game educates users about the tyrannosaur family tree.



The exhibition explores the 'most feared and revered' of all dinosaurs in new and different ways.

The exhibition's real and replica specimens are not only spectacular in scale and form, but also reveal some of the most significant discoveries in palaeontology of the past decade. *Tyrannosaurs* offers visitors a look at rare and magnificent fossils, reconstructing the life-sized skeletons of these terrifying carnivores like you've never seen before. You think you know *T. rex* – think again.

One of the most exciting developments in dinosaur palaeontology over the past five years has been the discovery of early Asian tyrannosaurs – the ancestors of later giants like *T. rex*. Discoveries like this are changing the story of the evolution of tyrannosaurs. New research is also shedding light on the true character of *T. rex*, the most 'extreme' tyrannosaur.



Hands-on fossil casts add a tactile educational experience.



HOW DO YOU SPOT A TYRANNOSAUR?



YES

CONTENT



## COME FACE-TO-FACE WITH LIFE-SIZED TYRANNOSAURS

*Tyrannosaurs* presents a variety of objects including a selection of striking life-sized skeletons and models.

Interactives in the exhibition help visitors learn about the evolution of the tyrannosaurs and the latest scientific stories behind these remarkable creatures. *Tyrannosaurs* incorporates innovative multimedia experiences to engage audiences of all ages.

*Tyrannosaurs* takes a playful approach to presenting the exhibition elements, while ensuring layered content is available to explore the science behind this most popular dinosaur group.

The skeletons are brought to life through computer generated image (CGI) animations presented in digital label screens. Each animation features hotspots on the animal's body. When activated, a quick fact is revealed and the animation comes to life, snapping at the visitor's fingers if they get too close to the teeth or nose - or walking and running when its legs and feet are touched. Digital labels also present two other threads of information; the "dino hunter" story of the palaeontology relating to the fossil and the "habitat" story describing the ancient environments. This additional content is geared for those audiences that like more detailed information.

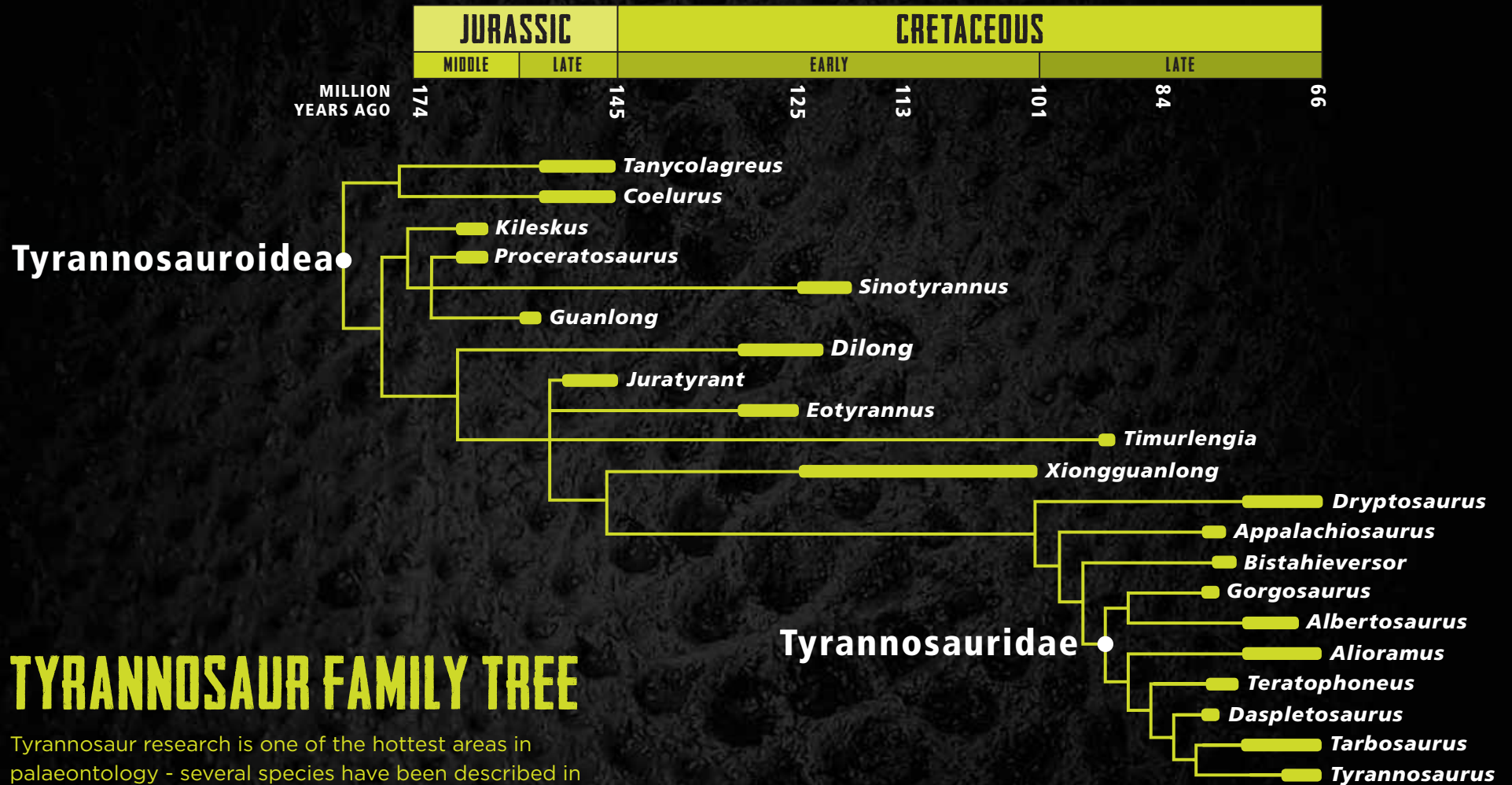


The exhibition also showcases a range of cutting edge technologies to present immersive and engaging multimedia experiences. These include:

- 11-metre video projection tunnel showing life-sized dinosaurs running amok in your city
- Digital screens featuring computer animated creatures and layered content
- Large scale, multi-touch and multiplayer family tree gaming table
- Interactive augmented reality experience where visitors can play with life-sized dinosaurs in the gallery, in real time
- Free mobile app game that challenges users to find and unlock 22 different tyrannosaurs. The *Tyrannosaurs* app has almost 3 million downloads to date!



1 of 5 complete tyrannosaur cast skeletons.



# TYRANNOSAUR FAMILY TREE

Tyrannosaur research is one of the hottest areas in palaeontology - several species have been described in just the past decade - and exciting new discoveries are regularly rewriting the family tree. The tree you see here is bound to change as yet another tyrannosaur species makes its fearsome debut!





## TYRANNOSAURUS REX



**LIVED**  
western North America

**DISCOVERED**  
Saskatchewan, Canada



*Tyrannosaurus rex* was the ultimate tyrannosaur, in every sense of the word: it was one of the last of its kind, the largest and most successful. *T. rex* was a fearsome hunter, with all the tools of the trade: excellent senses of sight, smell and hearing, a massive head, powerful jaws and bone-crushing teeth. Maybe we're lucky it isn't still around!

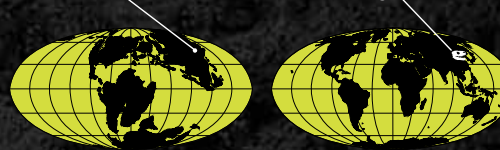


## DILONG PARADOXUS



**LIVED**  
north-eastern Asia

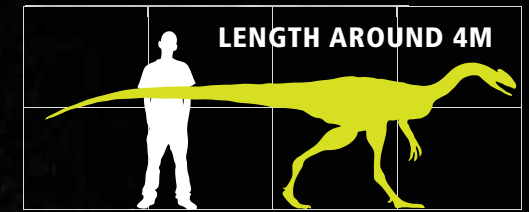
**DISCOVERED**  
Liaoning, China



*Dilong* (DIE-long) was the first tyrannosaur found preserved with feathers. Pint-sized and covered in down or protofeathers, *Dilong* may sound 'cuddly', but it had sharp teeth and the long arms and three-fingered, grasping hands of a predator. *Dilong's* fluffy feathers were useless for flying, but they probably kept the dinosaur cosy in the cold. This suggests the small tyrannosaur was active and warm-blooded, rather than cold-blooded like modern reptiles.

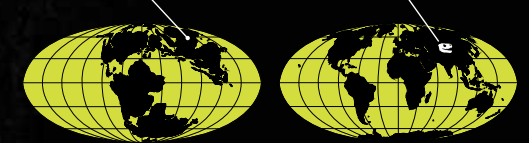


## GUANLONG WUCAII



**LIVED**  
Central Asia

**DISCOVERED**  
Xinjiang, China



*Guanlong* isn't your typical tyrannosaur. It had long arms with three-fingered hands for grabbing and ripping, like many other meat-eating dinosaurs, or theropods. It also had a flashy head crest unusual for a predator. This may have been attractive to other *Guanlong*. Like many theropods, and perhaps some plant-eating ornithomimids, it almost certainly had feathers.

## DINOSAUR HUNTER

## HABITAT

*T. rex* roamed across North America when much of the region was covered with a shallow inland sea, with the Rocky Mountains rising in the far west. The climate tended to be damp and warm year-round. Forests of oak, birch, conifer and magnolia dominated the land, along with coastal swamps of ferns, cypress and sequoia-like trees. Animal life included many we would recognise today, such as birds, insects, snakes, crocodiles, amphibians and small mammals, alongside such plant-eating dinosaurs (that formed *T. rex*'s prey) as *Triceratops*, hadrosaurs and ankylosaurs.



Recreation of western North America during the Late Cretaceous Period.

IMAGE COURTESY OF THE ROYAL SASKATCHEWAN MUSEUM

Interactive digital label

# EXAMPLE OF INTERACTIVE DIGITAL LABELS & GRAPHIC WALL PANELS

## DISCOVERING T. REX

### 32 YEARS OF MYSTERY



1874

The first *T. rex* fossil (a tooth) was discovered in Colorado by schoolteacher Arthur Lakes. The tooth wasn't assigned to a species.

COURTESY OF THE PEARSON MUSEUM OF NATURAL HISTORY, YALE UNIVERSITY, NEW HAVEN, CONNECTICUT, USA



1892

Fossil hunter John Bell Hatcher discovered a fragment of dinosaur backbone in South Dakota. The bone was recognised as a new species, called *Manospondylus gigas* (which we now call *Tyrannosaurus rex*).



1900

Barnum Brown (nicknamed Mr Bones) discovered a partial dinosaur skeleton in Wyoming. It was later identified as a *T. rex*. He found a second skeleton two years later in Hell Creek, Montana.

COURTESY OF UNIVERSITY ARCHIVES, UNIVERSITY OF KANSAS LIBRARY



1905

Palaeontologist Henry Fairfield Osborn described Brown's finds, naming the 1900 skeleton *Dynamosaurus imperiosus*. The second skeleton, found in 1902, he named *Tyrannosaurus rex*.

COLLECTION OF THE NEW YORK HISTORICAL SOCIETY



1906

Osborn realised Brown's skeletons were both the same species: *Tyrannosaurus rex*.

AMERICAN MUSEUM OF NATURAL HISTORY

Interpretive wall panel

A large, detailed skeleton of a dinosaur, likely a Tyrannosaurus Rex, is displayed in a museum. The skeleton is mounted on a dark, reflective surface, and its long tail extends across the top of the frame. The lighting is dramatic, highlighting the texture of the bones. A bright yellow arrow-shaped graphic points to the left, containing the word "THEMES" in bold, black, distressed font.

**THEMES**



THEMES



Overturning our preconceptions, the life-size *Guanlong* diorama highlights the creature's proto-feathers and moderate size - both newly discovered features of early tyrannosaurs.

## WHAT IS A TYRANNOSAUR?

Discover how tyrannosaurs fit into the dinosaur family tree and explore the key features that define a tyrannosaur - features that make them different from other dinosaur groups.

Visitors enter the exhibition and come face-to-face with a life-sized tyrannosaur ... only to discover it's a little bigger than they are! Here, they meet *Guanlong*, one of the earliest tyrannosaurs.



Educational infographics help contextualise the diverse and long evolutionary story of tyrannosaurs.



**EXPERIENCE HOW IT FEELS TO STAND  
ALONGSIDE THESE AMAZING PREDATORS**



## MEET THE FAMILY

Visitors are immersed in a large-scale projection experience, which introduces them to the tyrannosaur families. Set in a familiar, yet unexpected, context the visitor will see how tyrannosaurs came in a range of sizes and shapes; some with feathers, some without, some much more threatening than others. Being surrounded by numerous different tyrannosaurs, interacting with each other and the urban environment, will be an unforgettable and unique visitor experience; a powerful introduction to these fascinating creatures.



Tyrannosaurs rendezvous for a family reunion in a fun, immersive video projection (which can feature your city) with animations based on the latest scientific research.





## THEMES



The timeline interactive reveals how natural selection, continental drift and climate change facilitated the evolution of tyrannosaurs.

# EXPLORE THE FAMILY

Tyrannosaurs lived in different habitats, at different times and evolved to fill different ecological niches. Here the experience opens up to allow visitors time to investigate the tyrannosaur families in detail. What do we know about them and how? What don't we know? Exhibits present the evolution of the tyrannosaur families, revealing how natural selection, continental drift and climate change facilitated their transformation from carnivores little bigger than ourselves, to massive top predators.

This section comprises a combination of specimens, casts, models and interactives. The visitor will learn about the specimens themselves and be given contextual information such as time, place, concepts on behaviour based on the fossil evidence, habitat from geological sources and 'behind the scenes' information about the discovery itself. Marvel at complete cast skeletons and skulls of *Dilong*, *Lythronax*, *Albertosaurus*, *Daspletosaurus*, *Teratophoneus*, *Tarbosaurus* and *Appalachiosaurus*.



A centrally located, large multi-touch, multiplayer game explores the tyrannosaur family tree. Played across three large screens, synched to show a seamless image of the tyrannosaur cladogram, visitors are invited to break eggs (by touching and tapping them), hatch a dinosaur and fit it onto the family tree (clues are available if needed!). But players, beware! The dinosaurs need controlling as they tend to prefer playing with the museum crates, tin drums, balls, tyres and bits of steak that populate the table. These can also be manipulated by the user, providing an additional level of entertainment for kids and kids-at-heart.



THEMES



The giant *T. rex* shadow comes alive to surprise, scare and delight the visitor.

## T. REX – THE ULTIMATE

*T. rex* was the ultimate tyrannosaur – learn what makes it one of the most formidable predators that ever lived.

The focal piece of this section is the cast of 'Scotty', one of the largest and most complete *T. rex* specimens in the world. Connected to Scotty is a suite of exhibit stations that reveal what made *T. rex* the ultimate predator and the wealth of research (and debate) surrounding this fascinating creature.

Touch casts of a *Triceratops* fossilised leg bone, fossilised teeth of *T. rex* and coprolite. Assemble spare parts from a "bone bank" in a multi-touch large-format 3D puzzle of the skeleton of 'Sue', another famous *T. rex* specimen.

Get inside the head of *T. rex* and learn how *T. rex* used its eyes, ears and nose. Watch the video to find out how sensitive the tyrant lizard king's senses really were. But not all is as it seems! Scotty's shadow, cast across a 20-metre wall, has a life of its own. The shadow is actually a projected film, scripted to show the animated skeleton performing a number of short humorous 'skits' every minute – from burping, dancing, roaring and yawning to a shadow-puppet hand show. A favourite with visitors of all ages, it also provides great photo opportunities and highlights the massive scale of the mighty *T. rex* compared with humans.





THEMES

## LATEST FINDINGS FROM CHINA ARE RE-WRITING T. REX'S HISTORY

### T. REX ALIVE!

Get up close and personal with *T. rex* and a host of other tyrannosaurs in this cutting-edge augmented reality interactive experience. How does it feel to stand alongside these amazing predators?

Visitors encounter a huge wall of what appears to be security camera footage of various spaces in the exhibition. Slowly, tyrannosaurs can be seen 'breaching' various museum areas and entering the gallery spaces. Soon, they enter the exhibition itself and interact with the visitor in real time.

The AR is a scripted film/animation sequence interspersed with live camera feed of visitors in the gallery from four different camera locations. It runs from a rear projection across a five metre wall (floor to ceiling) in order to present the animals as life-sized and also accommodates large groups of visitors interacting with multiple creatures in the gallery setting. A Kinect system detects visitor movement around a hotspot marked on the floor and feeds back to the computer during the live camera feed segments so the tyrannosaurs move as if reacting to the visitor in the space. The 'scripted' and 'live' films together present a unique and believable scenario that tyrannosaurs are with the visitors in the room.

This interactive has proven to be a favourite, voted the 'people's choice' experience in the exhibition as it is surprising and immersive for the visitor and excites audiences of all ages.



The augmented reality experience has been a crowd favourite.





THEMES

## TYRANNOSAURS – THE LEGACY

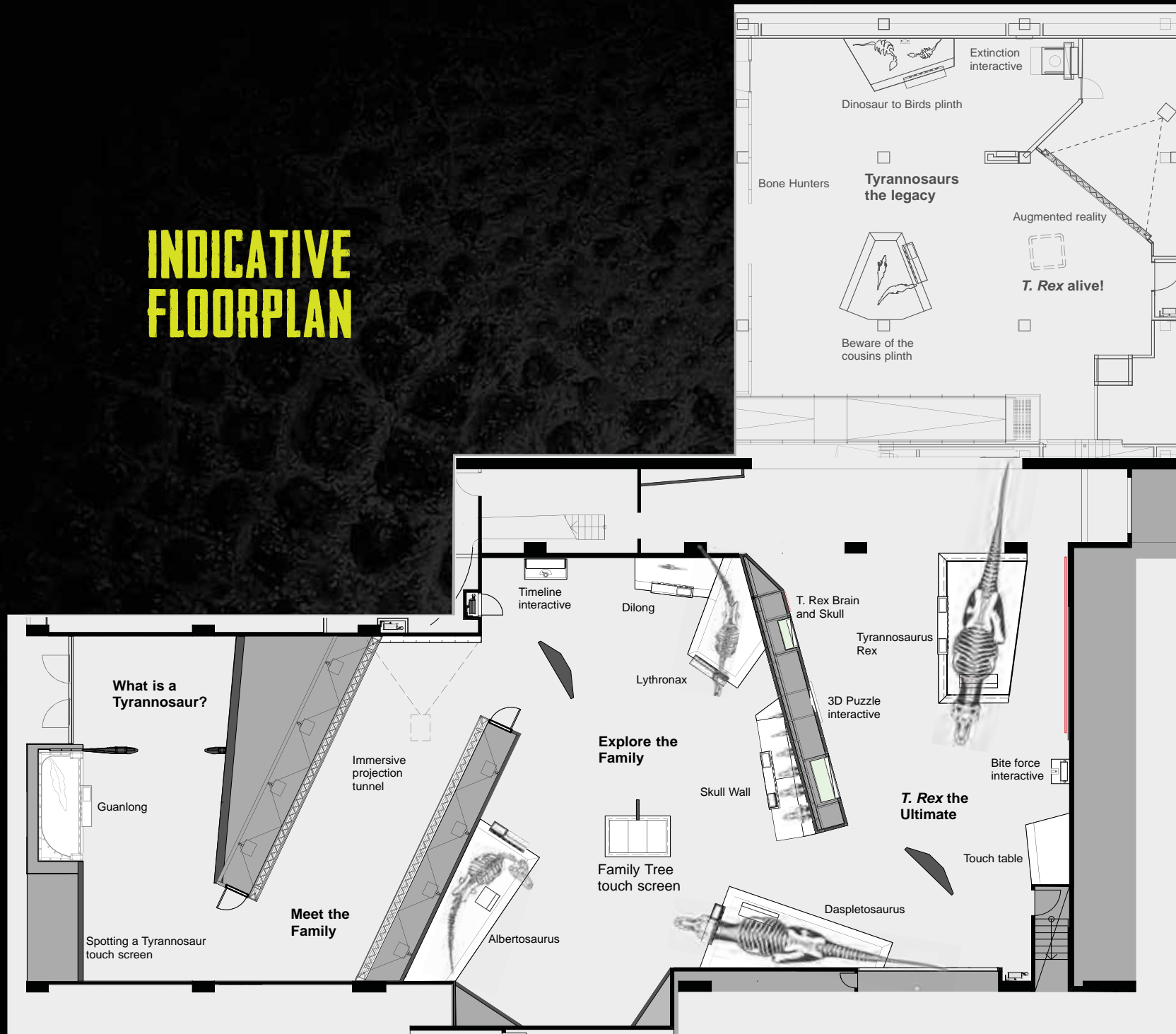
Tyrannosaurs thrived for 100 million years and were some of the largest and most successful predators ever. Despite their final demise during one of Earth's biggest mass extinction events, tyrannosaurs live on – in our imagination, our culture and in their bird cousins in our backyards.

The final part of the exhibition narrative presents the legacy of tyrannosaurs and asks how they still impact our lives. Bringing the story full-circle, it reveals how the latest findings from China are re-writing *T. rex*'s history, before discussing both the extinction of the tyrannosaurs, and how their cousins – the birds – survive today.

Examples of *T. rex*'s  
legacy in popular culture



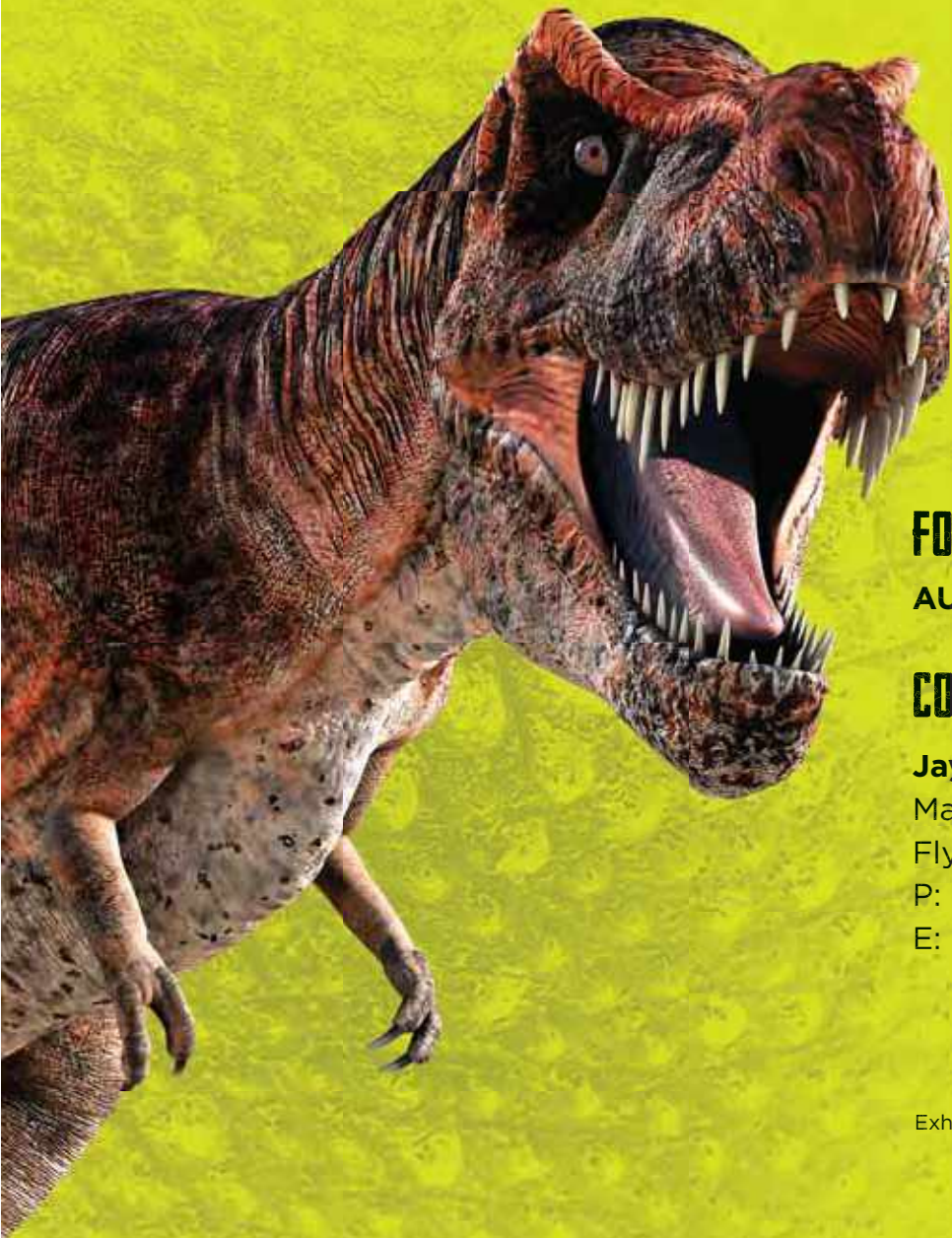
# INDICATIVE FLOORPLAN





## SPECIFICATIONS

VENUE GALLERY SIZE	<b>7,000 sqft to 12,000 sqft</b>
VENUE CEILING HEIGHT	<b>19 ft recommended</b>
CONSERVATION & SECURITY	<b>Moderate</b>
STANDARD RENTAL LENGTH	<b>3 month minimum</b>
INSTALL & DE-INSTALL TIME	<b>Up to 10 working days for each</b>
FREIGHT	<b>Exhibition travels in 3 x 53 ft trailers. Crates require storage</b>



## FOR MORE INFO VISIT

[AUSTRALIANMUSEUM.NET.AU/LANDING/TYRANNOSAURS](http://AUSTRALIANMUSEUM.NET.AU/LANDING/TYRANNOSAURS)

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Exhibition developed and produced by the Australian Museum and toured by Flying Fish



**AUSTRALIAN MUSEUM**



**FLYING FISH**