Battle of the Titans

- Produced by Seonna Taisteal Travelling Exhibits Ltd,
in partnership with renowned exhibit designer/fabricator Hall Train Studios
- Up to 5000 sq-ft of interactive experience, especially designed
to meet the needs of botanical gardens and their audiences
- Featuring real fossils, stunning graphics, exciting videos, living dioramas,
interactive displays, immersive background audio, live plants,
and of course ... life-size dinosaurs!

This preview showcases many of the highlights of the exhibit.
Use your computer's arrow keys to advance the slides. We hope you enjoy it.
Please see page 58 for info on how to contact us,
to discuss how ***Battle of the Titans*** may suit the needs
of your institution and patrons.

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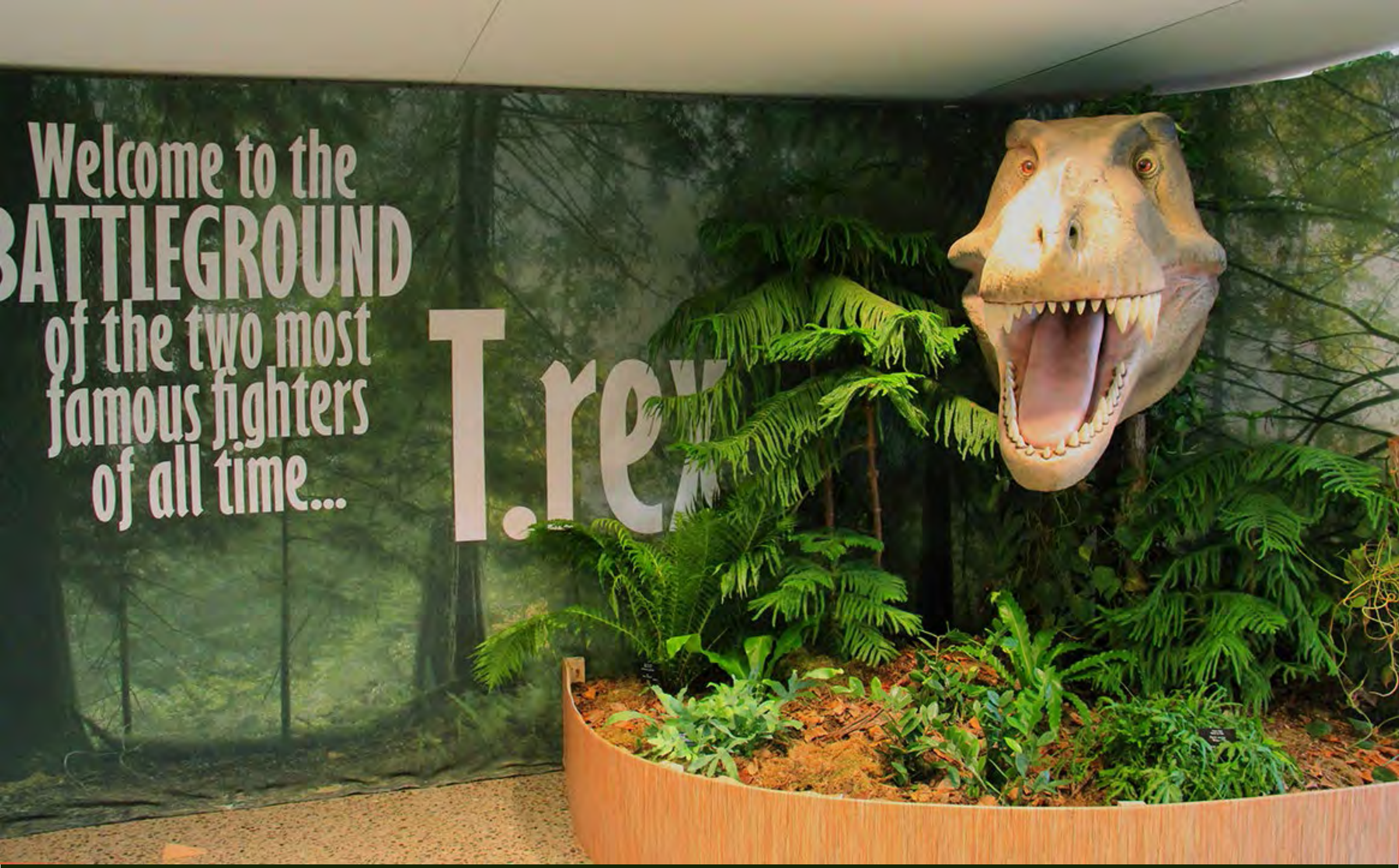

The entrance to the exhibit is framed by life-size heads of our two famous adversaries. On the left, visitors see the full-size head of a *T. rex* bursting out of a forest of living plants ...

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... On the right of the entrance is the head of *Triceratops*, bursting out of its own living forest, its herd glimpsed in the background. Background murals feature realistic dinosaur sculptures composited into photographic images of living forests identical to those of the late Cretaceous.

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The exhibit is adaptable to a variety of different floor plans.
In this scenario, visitors' first sight after entering is of our two life-size protagonists, frozen in a charge towards each other.
Which will win the deadly battle? The answer may be surprising.

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From just inside the entrance, view of extremely detailed, full size *Triceratops*.
All sculptures feature the same level of scientific knowledge and artistry that have brought Hall Train Studios renown in the museum world for over 20 years.

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All sculptures in the exhibit are based on
the most recent evidence of fossilized skin impressions.
For smaller venues, these two full sized sculptures may be placed outdoors.

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Both animals' heads were sculpted directly
over laser-scanned and rapid-prototyped copies of the real skulls.
This innovative approach has never been done before.

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The exhibit offers visitors a journey through the century of research that has gone into these two animals, beginning with the startling discoveries in the late 1800s that completely shook up our understanding of the evolution of life on Earth. The history stations feature touchable fossil replicas.

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Visitors can watch movie clips from 1916, on real antique Mutoscopes made in 1912, the earliest motion-picture technology. From the first, both scientists and the public imagined dinosaurs fighting with each other. The hands-on technology seems like magic to children, who love cranking the handle and watching the pictures flip by, making dinosaurs come to life.

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Replicas of some of the earliest dinosaur restoration concepts.
On L: Replica of Charles Knight's *Triceratops* sculpture. Knight remains
one of the most celebrated natural history artists of all time.
On R: Replica of Erwin S. Christman's original miniature concept for the American Museum
of Natural History depicts the early 20th-century view of *T. rex* as an active, dynamic predator.
Due to financial constraints, the fossils ended up in a static, tail-dragging pose,
which influenced people's concept of *T. rex* for decades.

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The Tyrant King was bad news from Day One.
This station presents the concept of the precocial hatchling, ready to fend for itself shortly after birth. Large panel images feature realistically up-to-date, feathered juvenile *T. rex* sculptures, composited into forest backgrounds identical to those of the late Cretaceous.

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In contrast to the aggressive juvenile *T. rex*, the newly-hatched *T-tops* was a gentler animal, possibly more dependent on parental care at the start. However, the exhibit later shows that despite its 'cute' origins, *T-tops* grew up to be a real contender.

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Oversized station on *T. rex*'s diet features a touchable fossil cast of the famous 'Rex Biscuit', a *Triceratops* leg bone bearing *T. rex* tooth holes. The panel features information on the latest discoveries about growth, mobility, and the changing diet of *T. rex* as it grew, and how all of that related to ecological balances in nature.

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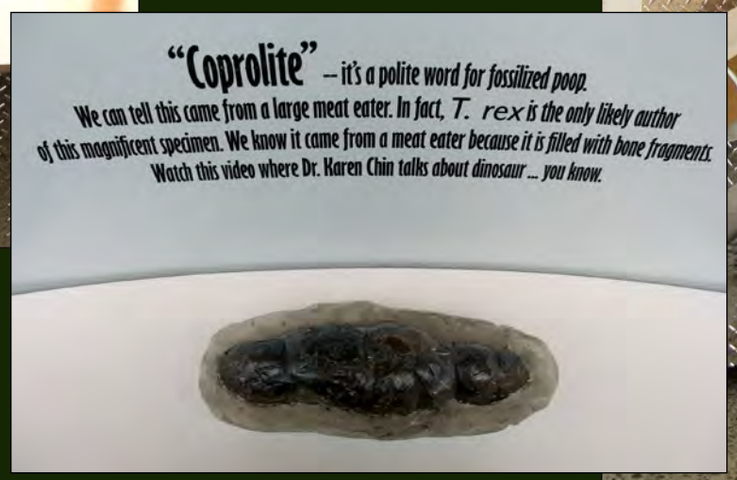

This panel contines the discussion of *T. rex* digestion to its natural conclusion --
to the delight of young visitors. In the video, renowned paleontologist Dr. Phil Manning of
the University of Manchester contemplates the implications of a carnivorous diet.
There is much to be learned from dinosaur droppings -- seriously!

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This stanchion on *T-tops'* unique diet includes a video of Dr. Karen Chin discussing the feeding habits of this and other giant herbivores of the time.
Most panels include video screens featuring interviews and dinosaur animation.

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The *T-tops* diet station includes real fossil material, video, and informational visuals.
Fossil teeth show the different adaptations for chopping and chewing plants.

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The exhibit does not shy away from the topic of dinosaur digestion, both coming and going.
This display estimates the amount of *T-tops* output in one hour.

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Dinosaur digestion offers a great opportunity to discuss ecology.
The various displays explain the relative nutritional value per volume of plant-based and meat-based diets, as well as the value of droppings as fertilizer for the environment.

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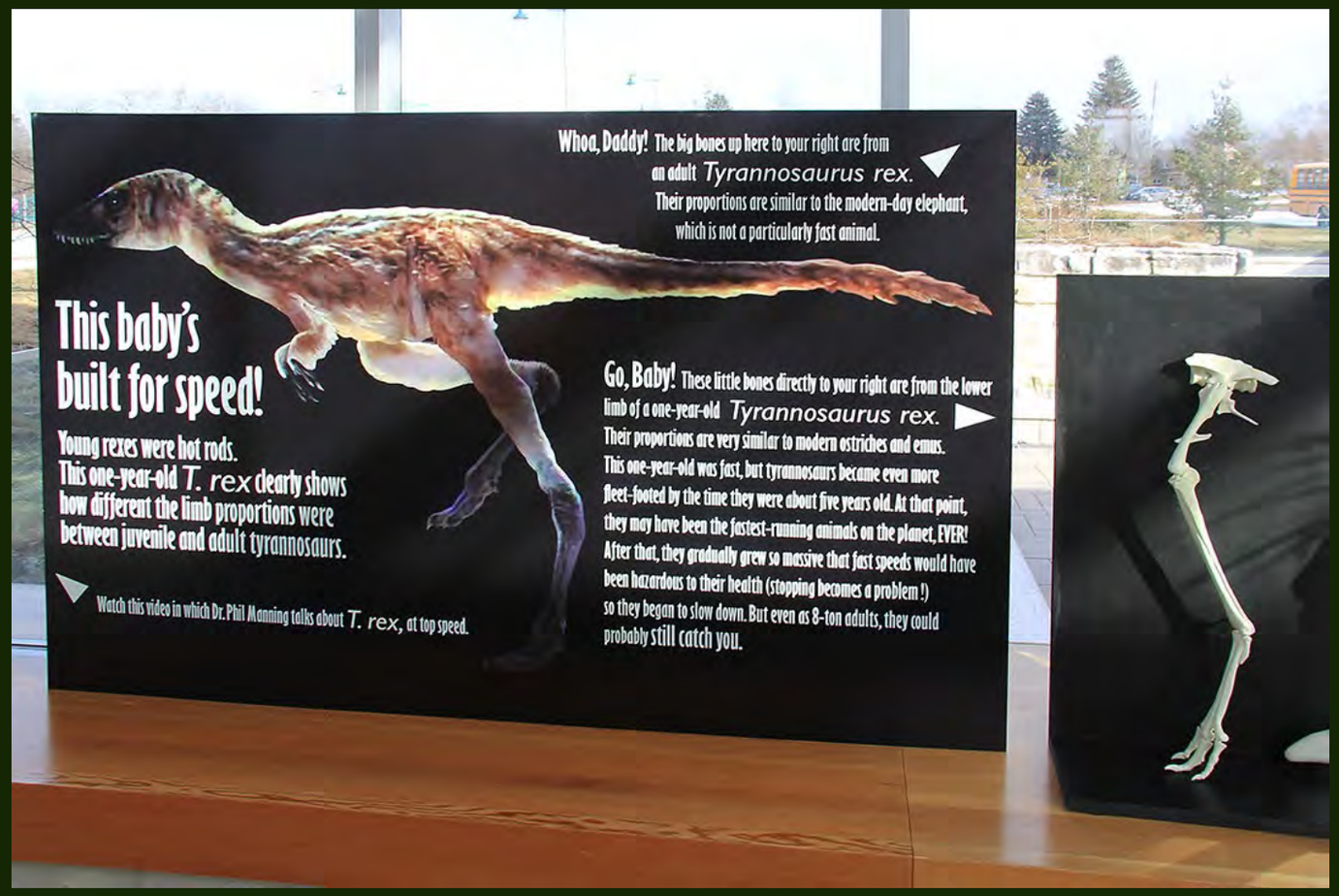

This station discusses the much-disputed question of whether *T. rex* was a speedy predator or a plodding carrion-feeder. Huge differences between juvenile and adult *T. rex* legs -- not only in size but proportion -- made the answer to this question change significantly throughout *T. rex*'s life. This station also includes video documentary that discusses the differences between adult and juvenile *T. rexes*.

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This station on *T-tops* mobility contains a video featuring world-renowned paleontologist Dr. Phil Manning of the University of Manchester discussing *Triceratops* gait, his argument supported by a life-size replica of the *Goldenensis* (*T-tops)* trackway. *T-tops*' sprawling gait did not make it 'primitive' -- rather, it was a superb adaptation for self-defense in close quarters, a trait also seen in modern animals such as the Bulldog.

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The Vision section uses full-size casts of *T-tops* and *T. rex* skulls to compare the vision of predators and herbivores. Special optical devices embedded each skull allow visitors to experience the unique visual perspective of each animal.

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Seeing through the eyes of a giant predator.
Visitors literally see how each animal's particular style of vision corresponds to its place within the ecosystem.

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The Vision section also examines astounding facts about the increasingly colourful world of the Cretaceous, a time when flowering plants began their partnerships with pollinating insects, deciduous trees began displaying brilliant fall colours, and the world generally became a much more colourful place.

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These are things we can be pretty sure of, but we are not certain whether big dinos like T-tops and T.rex were colourful.
When a plant or animal becomes fossilized, it loses its colour ... or does it?

Watch this incredible video that shows how Dr. Phil Manning and his team are finding traces of colour in fossils, using the Synchrotron at Stanford University.

amber

Amber gives us our most vivid picture of ancient life – it [illegible] actual specimens in all of their fine detail and [illegible] as far back as 230 million years.

By the time of the Cretaceous, th[illegible] more and more colourful, as fl[illegible] the attention of little bees [illegible] here. This era marked th[illegible] symbiosis be[illegible] pollinating insects, [illegible] partnerships in th[illegible]

Amber has given [illegible] certain ancient pl[illegible]

This is a specimen of *Proplebeia dominicana*, a stingless bee between 15 and 20 million years old, from what is now the Dominican Republic.

This bee species was frequently trapped in amber, so it has given us lots of information about the distant past. One bee of this species carried the only fossil of orchid pollen ever found.

Two more views of our remarkable little stingless honey bee.

Amber is fossilized resin

from extinct trees. Many different kinds of animals and plants become trapped in tree resin and can be found now, millions of years later, as fossils in amber.

Insects are among the most common kinds of animals found in amber. *Proplebeia dominicana* are fairly common as fossils. This was because the workers would collect small balls of tree resin to help construct their nests.

Fossils in amber are helping biologists to reconstruct the past.

Dinosaur feathers found in amber!

These dinosaur feathers, trapped in amber, were found in Canada very recently. It is just possible that the feathers came from a juvenile Tyrannosaur.

The Colour stanchion includes a 20-million-year-old bee, trapped in amber.
The panel explains how amber has been a significant contributor to science in many ways --
preserving not only ancient insects, but also plant pollens, other plant parts,
and even dinosaur feathers!

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The Brains station includes hands-on casts from inside the craniums of both *T. rex* and *T-tops*, showing the actual size and shape of their brains. *T. rex*'s may have been bigger, but would that always make *T. rex* the winner in a battle with *T-tops* ... ?

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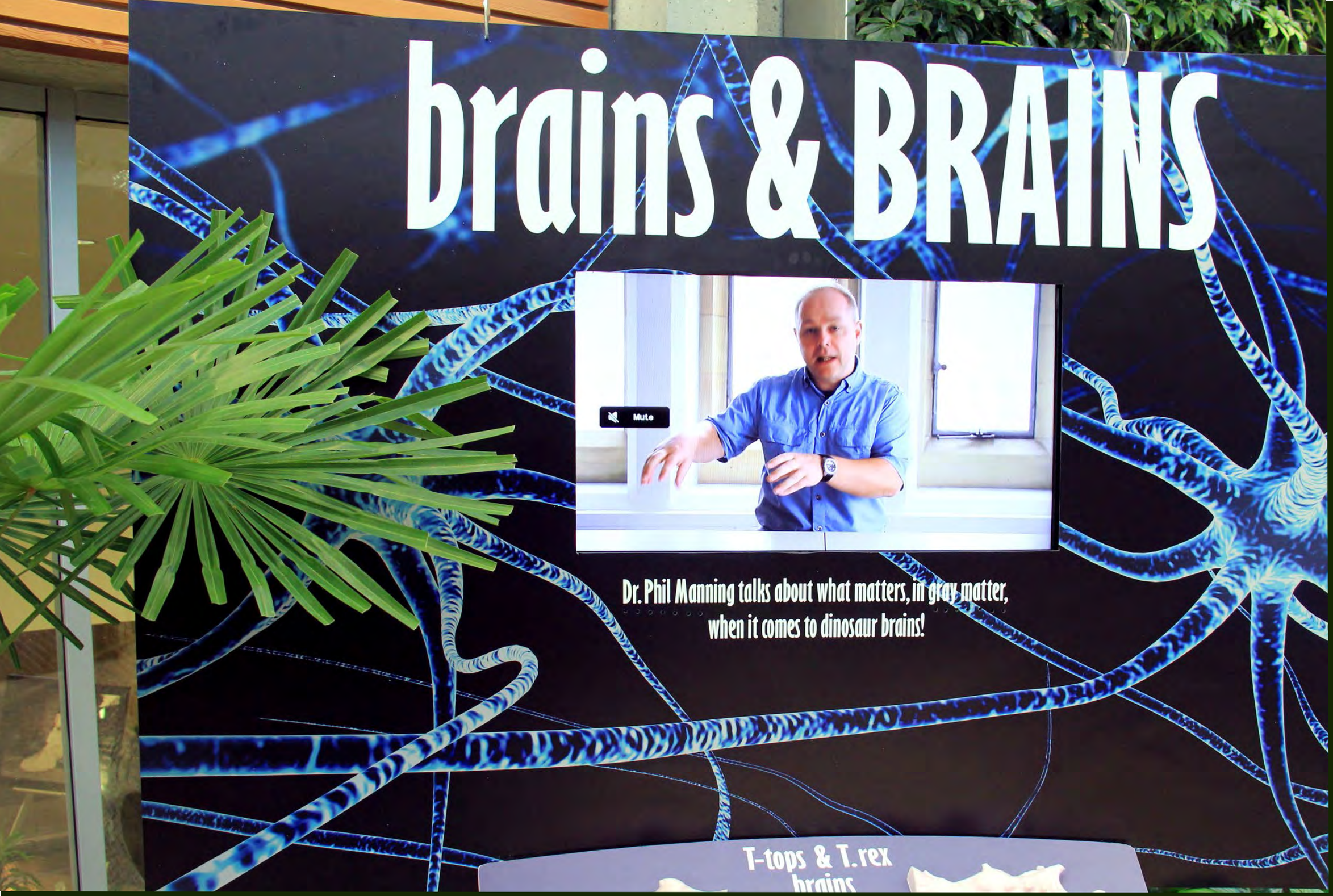

The Brains station features video of Dr. Phil Manning discussing gray matters ... pointing out that one brain is not necessarily 'better' than the other; rather that each animal's specialties evolved to thrive within its place in the ecosystem.

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A series of panels on *T-tops* behaviour features naturalistic action scenes --
of herding behaviour, as well as how they might have made use of those impressive horns!
On video, Dr. Phil Manning compares features and behaviours of ancient life forms to living species.

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This panel discusses the variety of possible functions of *T-tops* horns,
and the different, and sometimes puzzling, horn types that evolved on related species.

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A series of panels deals with aspects of *T. rex* behaviour, including the questions of whether they cared for their babies, and how they hunted throughout the different stages of their lives. Videos compare aspects of dinosaur behaviour to modern animals.

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More touchable dinosaur fossils in the *T. rex* behaviour section - and illustrations that recreate the story of what happened long ago.
Paleontology pieces together such stories, based on clues from the fossil evidence.

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A living diorama (adjustable from 25-35 ft long) takes visitors back to a late Cretaceous forest with *Triceratops* in the background, a nesting *Troodon* in the foreground, and several display panels featuring fossils of Cretaceous plants still found in the forests of today.

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The *Troodon* sculpture located within the living diorama features extremely realistic detail based on the latest fossil evidence of feather-bearing dinosaurs.

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Young people are fascinated by the strange and realistic *Troodon*.

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The diorama includes touchable fossil plants,
of species alive in the Cretaceous that still thrive today.

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Beside the diorama, a video screen displays three-dimensional animation of *Troodon*'s nesting behaviour, composited into a live video background.

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These stunning, colourful graphic stations explain the evolution of animals from their common ancestor, as linked to the rise of plant groups such as the monocots.

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The exhibit provides plenty for those who like to read,
as well as for those who like to touch and experience.

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Elegant information graphics demonstrate striking relationships between the evolution of plants and animals on Earth.

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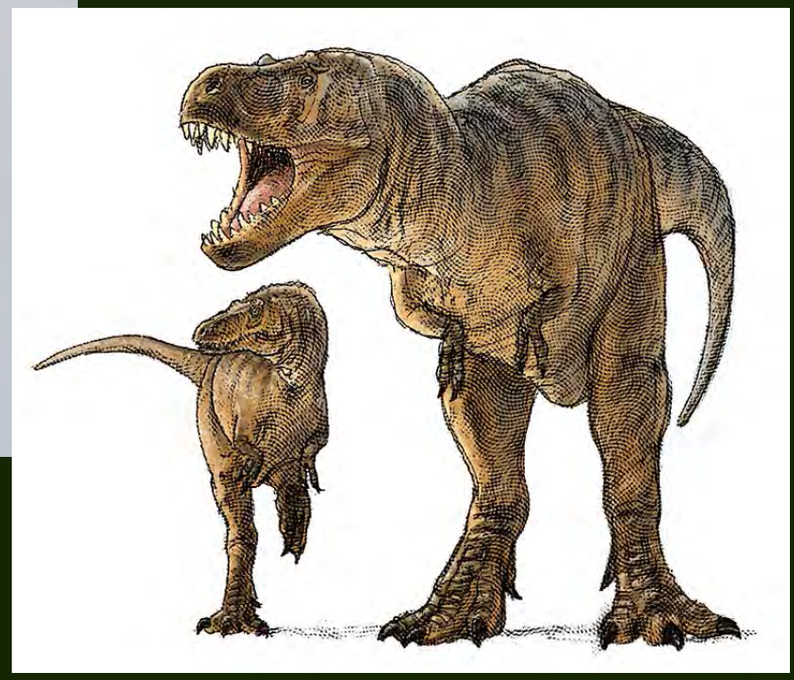

At left is an illustration from the 'Archosaurs' panel,
showing the various groups that evolved from a common Archosaur ancestor.
Special custom illustration effects and techniques were developed for many of the panels.
The illustrations combine classic illustration values with up to date digital media.

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Cute kids are attracted to ....

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.... the cute ancestor of both *T. rex* and *Triceratops*, the tiny, 1-foot-long *Lagosuchus*, great-grandmother of all birds, dinosaurs, crocodiles, and pterosaurs.

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Grown-ups and kids alike enjoy touching real fossils.

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Illustrations recreate the stories of what happened long ago in violent clashes between our two protagonists, as seen in the actual fossil evidence. The outcomes were sometimes surprising! Video features Pete Larson, world-famous *T. rex* and *Triceratops* specialist, discussing the significance of these fossils.

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An oversized panel displays the battle between *Velociraptor* (a carnivore) and *Protoceratops* (a herbivore). This was the first fossil to be found of two dinosaurs who had killed each other - locked in mortal combat, they died in each other's clutches.

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Paleontologist Pete Larson introduces the most astounding fossil find ever. The Dueling Dinosaurs of Montana, a huge herbivore and carnivore almost as big as *T. rex* and *Triceratops*, killed each other simultaneously -- conclusive proof that you can't always predict the outcome of a titanic battle.

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A total of eleven video monitors in the exhibit feature over one-and-a half hours of interviews, dinosaur animation, computer graphics, and specially-filmed wildlife sequences of lions, rhinos, and other exotic species that compare lifestyles of extinct and living animals in their environments.

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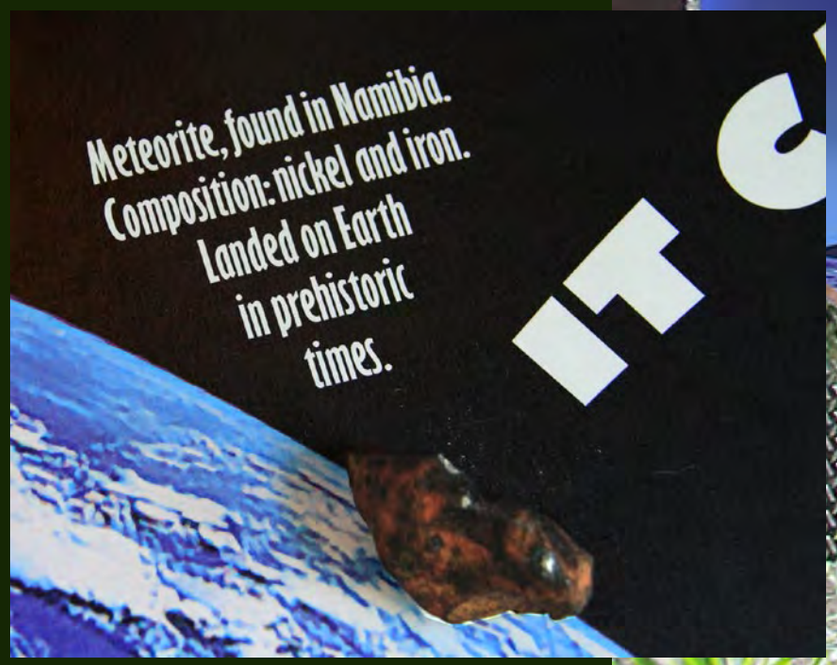

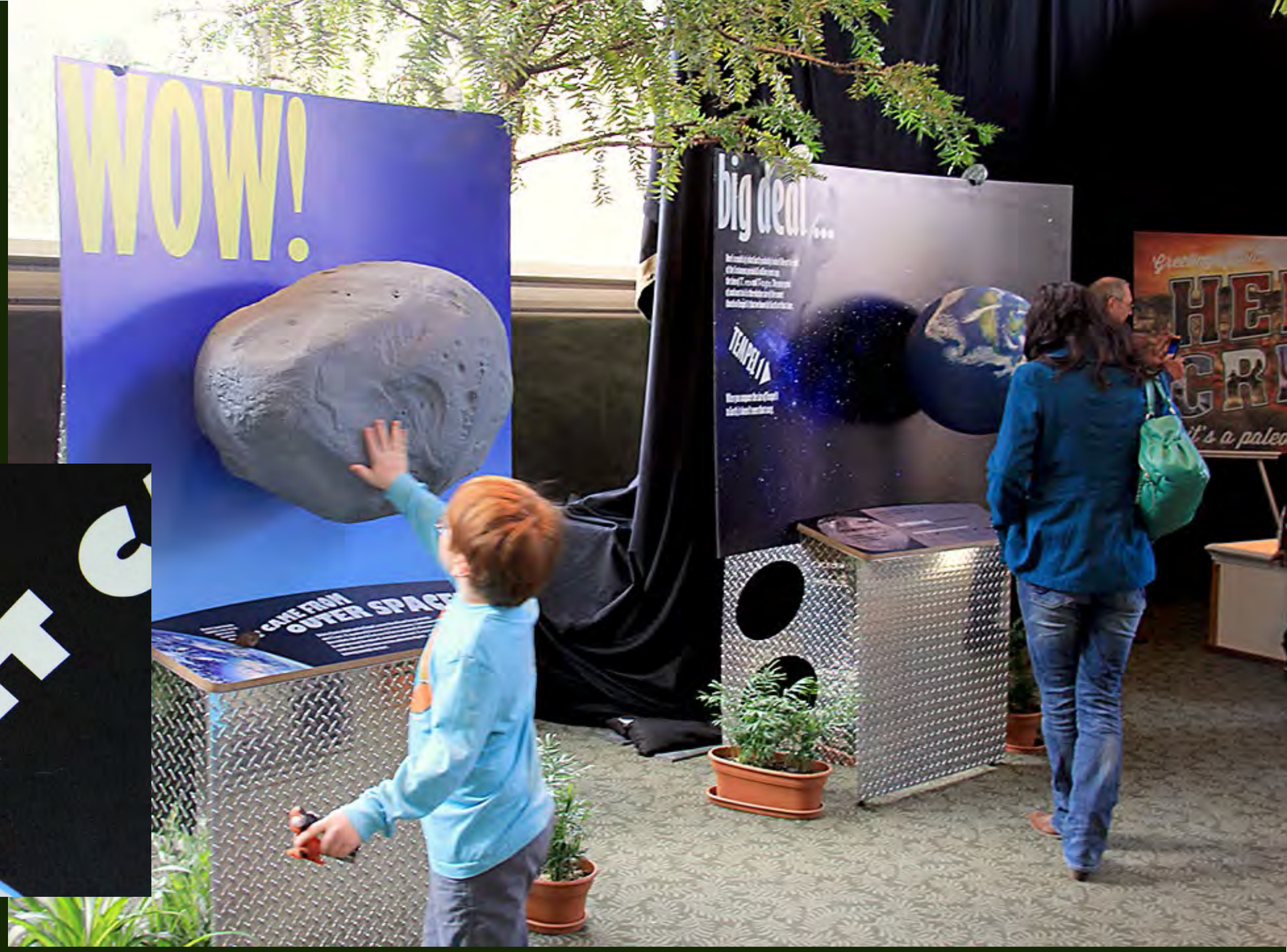

Two stations that deal with the K-T extinction event that ended the reign of the dinosaurs 65 million years ago, marking a wholesale shift in Earth's ecology. This station features a real meteorite kids can touch, as well as a scale model of the comet Tempel 1, thought to be similar to the one that hit Earth. The model was milled directly from data supplied by NASA.

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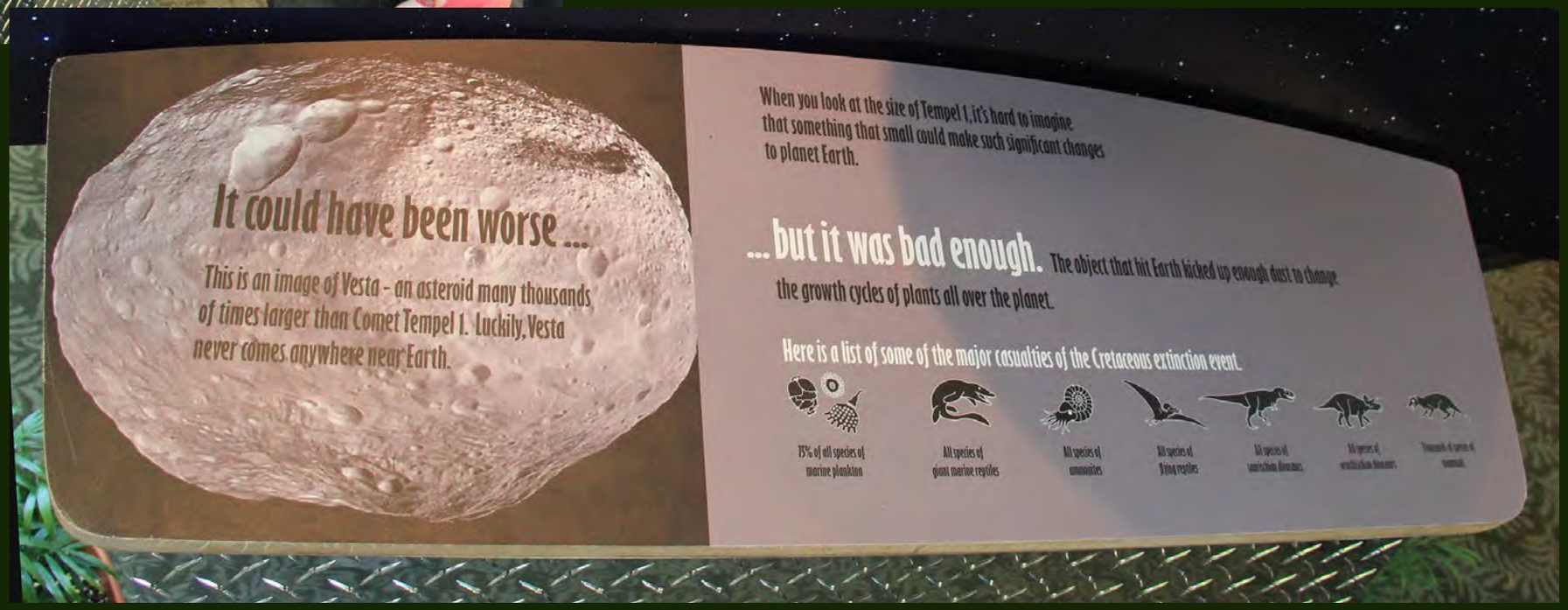

This station features a model of Earth as it appeared 65 million years ago,
when more than just the big dinosaurs went extinct. The relatively tiny size of a comet
compared to Earth shows how a seemingly small disruption can lead to mighty consequences.

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This station discusses the concept of organisms' adaptation to their environment,
and the creatures that survived the K-T extinction and that still exist today.
The video talks about the important role extinction plays in the story of our planet.
The ecosphere lets people touch a living, self-sustaining world in a glass ball,
where tiny animals and plants live in perfect harmony.

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Every dinosaur exhibit needs a Dig Pit, and ours is digital -- a first.
Kids brush digital 'dirt' off fossil bones, assemble them into a skeleton, and watch as the dinosaur comes to life in a forest, roars, and the fun starts all over again.

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Battle of the Titans includes two startlingly realistic baby dinosaur models, that when operated by staff, appear to live -- moving, blinking, and squeaking. Each model is designed on a rig incorporated into a safari-style jacket; operation training is provided in our package.
These presentations attract huge crowds with regular shows throughout the day.

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Kids are captivated by encounters with the 'real live' baby *Triceratops*, which can be operated by staff in the lobby of the venue.

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Kids can safely encounter a fluffy, downy juvenile *T. rex* wearing a muzzle.

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Battle of the Titans gives kids a chance to do things they've always wanted to do!
Paleontology is often a child's first introduction to science.

Properly nurtured, this interest can last a lifetime.

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A child's fascination with dinosaurs never goes out of style.
And with the rapid pace of discovery in paleontology, the science behind it is always new,
with ever-more relevant links to current issues in ecology and conservation.

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Photo opps abound. Social media word-of-mouth has played a big role in publicizing the exhibit and related events.

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94.5% of visitors surveyed said they would recommend the experience to friends.*

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*Independent survey by Survey Monkey, Feb 2013, done for The Royal Botanical Gardens, Burlington, Canada

Thank you for perusing the highlights of our exhibit.
For more information, please visit:

<battleofthetitans.ca>

Seonna Taisteal Travelling Exhibits Ltd / Hall Train Studios Ltd.

To discuss how Battle of the Titans may serve the needs
of your institution and audiences,
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