ARCHITECTURAL SPLENDOUR REGAINED

"The Biodôme migration is much more than just a facelift. It's a migration in our way of viewing our relationship with nature."

Charles-Mathieu Brunelle, director of Espace pour la vie

Outstanding and inspiring teamwork

"The Biodôme Migration could never have happened if everyone had worked in silos. The level of complexity of the existing context and the cohabitation with living species required the participation of all stakeholders to succeed. For me, this high level of collaboration is a reflection of what we need to do to collectively address the environmental challenges facing humanity!"

Rami Bebawi, KANVA – Designer and architect of the Migration Project

An architecture where the visitor becomes an explorer

The design team proposes a multidisciplinary architectural approach that brings to light the building's original vault—an absolutely unique engineering gem. In the ecosystem environment, this approach provides multiple perspectives on the living species in a gesture of rapprochement and integration of visitors within the habitats, anchored in a strategy that promotes sustainable development and an immersive museum experience. The approach favours a progressive route rather than a linear one, encouraging visitors to wander at their leisure, a little like they would do spontaneously in nature. Creativity, sustainability, relevance and transmission are at the heart of this regeneration.

*Due to the COVID-19 situation, a one-way circuit may be imposed.

An architectural concept that awakens the senses and fuses science, art and emotion

A "living" wall

Each ecosystem is wrapped in a curved, flexible and fluid wall. This concept is inspired by biophilia, in its texture and movement, to produce an architecture that brings humans and nature closer together. Upon entering, visitors abandon their urban ecosystem to begin their transition into nature. In the whiteness of this reception area, which reflects the designers' desire for the highest purity, all our senses are put on hold—a moment of transition that allows visitors to better feel the contrast as they make their way toward the multisensory world of rich colours that resonates in each of the Biodôme's ecosystems.

Nothing wasted

Throwing away the scraps of fabric from this gigantic wall was not an option! The manufacturers have therefore set up an organization that collects surplus fabric, which is used by young people as part of a social reintegration project.

A mezzanine with multiple viewpoints

Located above the ecosystems, a new mezzanine offers unique views and multiple perspectives on three of the ecosystems: the Tropical Rainforest, the Laurentian Maple Forest and the Gulf of St. Lawrence. The mezzanine is accessible by an elevator as well as by walkways in the Rainforest and Gulf of St. Lawrence. It highlights the immensity of the building in a space that is bathed in light.

Fish go ziplining

To move the fish from one pond to another in preparation for the construction site, the Biodôme's technical services had a brilliant idea: by attaching a zipline to a beam and sliding a huge pouch of water with the fish inside, the team ensured a smooth "move." At the Biodôme, if it doesn't exist, we'll invent it!

A tunnel and wall of ice

Building a tunnel and an inner ice wall to separate the ecosystems of the Sub-Antarctic Islands and the Labrador Coast was a real engineering challenge! These ice structures clearly separate the penguin habitat from the alcid habitat. As visitors walk through the tunnel, they feel the climatic conditions of the Labrador Coast and experience a sense of closeness with the animals.

The ice tunnel is 2.5 m high and 2 m wide and extends over a length of 15 m. At the exit of the tunnel, an impressive 2 m high wall of ice runs 15 m along the Sub-Antarctic habitat.

Not your usual project

These imposing ice structures are made up of dozens of aluminium coils in which glycol cooled to -8°C circulates. The two self-supporting installations allow the permanent formation of a 15 to 20 cm thick layer of ice at a low energy cost, since the entire system is powered by excess thermal energy from the Biodôme's geothermal system. This highly unusual electromechanical project was designed by City of Montreal employees and is unique in the world!

A reception hall that opens onto the original structure

In a tribute to the former velodrome created for the 1976 Olympic Games, the visitor quickly discovers why this building had all the assets to be transformed into a “house of life”. The original environment, now rediscovered, is bathed in natural light and is much more inviting.

An architectural marvel

Renowned as a designer of sports facilities and a specialist in the use of concrete structures, French architect Roger Taillibert (1926-2019) was the master builder of Montreal’s Olympic Park for the 1976 Games. The Deauville swimming pool and the Parc des Princes de Paris are among the many structures he designed. He devoted his career to building for sport in the spirit of outstanding achievement, drawing inspiration from materials and techniques he used. To this day, the Olympic Stadium remains the building with the highest inclined tower in the world, at 165 metres.

More immersive ecosystems

The designers have done their best to ensure that the immersion is total and engages all the senses. When entering the ecosystems, sight is not the first sense solicited. First you hear, then you smell, feel the heat or coolness, and only then do you see nature. This introduction is not the result of chance, but of a real desire to make the experience more immersive, moving and sensory. In each ecosystem, the approach was revisited in order to rethink the very essence of the Biodôme and thus enhance the contact between humans and nature.

Inspired by the concept of biophilia

The architects and designers of the new Biodôme were inspired by the concept of biophilia to create a positive and soothing emotion in the reception hall. This concept, created in 1984 by Harvard entomologist Edward O. Wilson, suggests that the sight of a verdant landscape, an infinite sea, or flowers promising beautiful fruit, arouses a pleasant and soothing emotion in humans. Thanks to this concept, which was later refined by a number of authors, it is now recognized that contact with nature is beneficial for humans, regardless of their origins or age.

When installing a mural in the ecosystem of the Gulf of St. Lawrence turns into an underwater adventure

To put up the visuals for the new 10-metre-high mural in the Gulf of St. Lawrence ecosystem, the Biodôme team had to call upon a team of certified professional divers. Since it was not possible to empty the basin or move out the fish to carry out this operation, a scaffolding system was set up underwater. The use of scaffolding was the most effective means of giving construction workers access to the work area. A team of five divers clad in diving suits and hooked up to a lifeline descended into the 5-metre pool to set down the base of the scaffolding that would rise above the water to allow the new visuals to be installed. For these professionals used to more dangerous situations, this was a most unusual diving assignment, to say the least!

Spider-Men deploy their web

A textile mesh net was installed over the Gulf of St. Lawrence and the Laurentian Maple Forest ecosystems to keep the birds in their respective areas. These two nets, each with a surface area of 1.5 sq. km, are suspended and anchored to the Biodôme's vault. Given the abundant high vegetation in the Laurentian Maple Forest, setting up the net was a major undertaking. It quickly became clear that a specialist accustomed to working on hard to access structures needed to be brought in. A team of 9 spider-men (also known as rope access technicians) was requisitioned to install the mammoth textile device!

Building a habitat from scratch

The Biodôme will house a brand new habitat that had to be built from scratch in the rainforest to accommodate a new population of macaws. Creating this habitat required a multidisciplinary approach involving a wide range of experts, including a landscape architect and a structural engineer for the design of an artificial 4-metre-high clay cliff (proportional to the ecosystem), meticulous construction contractors specializing in "fake backgrounds" to replicate the textures, colours and finish on the cliff, not to mention the expertise of a geologist and a tropical bird specialist. Teamwork in action!

Migration project

This project combines the fine expertise of the City of Montreal's internal teams and numerous external experts. Reasserting its desire to fuse science, art and emotion, Espace pour la vie launched an international architecture competition for the Biodôme Migration project in February 2014. A renowned international jury, including personalities from the world of architecture and design as well as experts in biophilia and sustainable development, selected the winning team. The Design Bureau of the City of Montreal also helped Espace pour la vie set up and run the competition.

KANVA
Design architect
Coordinating architect
Quebec architect
Project manager
In collaboration with NEUF architect(e)s

Bouthillette Parizeau inc.
Electromechanical engineer

NCK inc.
Structural engineer

The team of collaborators

Groupe GLT+	Building code specialist and cost consultant
Atelier 6	Cost Estimator
LightFactor	Lighting design consultant
Bande à Paul	Collaborating museologist
Anick La Bissonnière	Collaborating setdesigner
Nathalie Matte	Collaborating museologist
Bélanger Design	Wayfinding specialist
Topo 3D	Land surveyor
Soft dB	Acoustics specialist

Project costs

37.2 million $ before taxes. This amount represents the total cost of the project, i.e. construction costs, related work, architectural competition, animal relocation, museology, professional fees, fit-up (furniture, shops, restaurant) and project management.