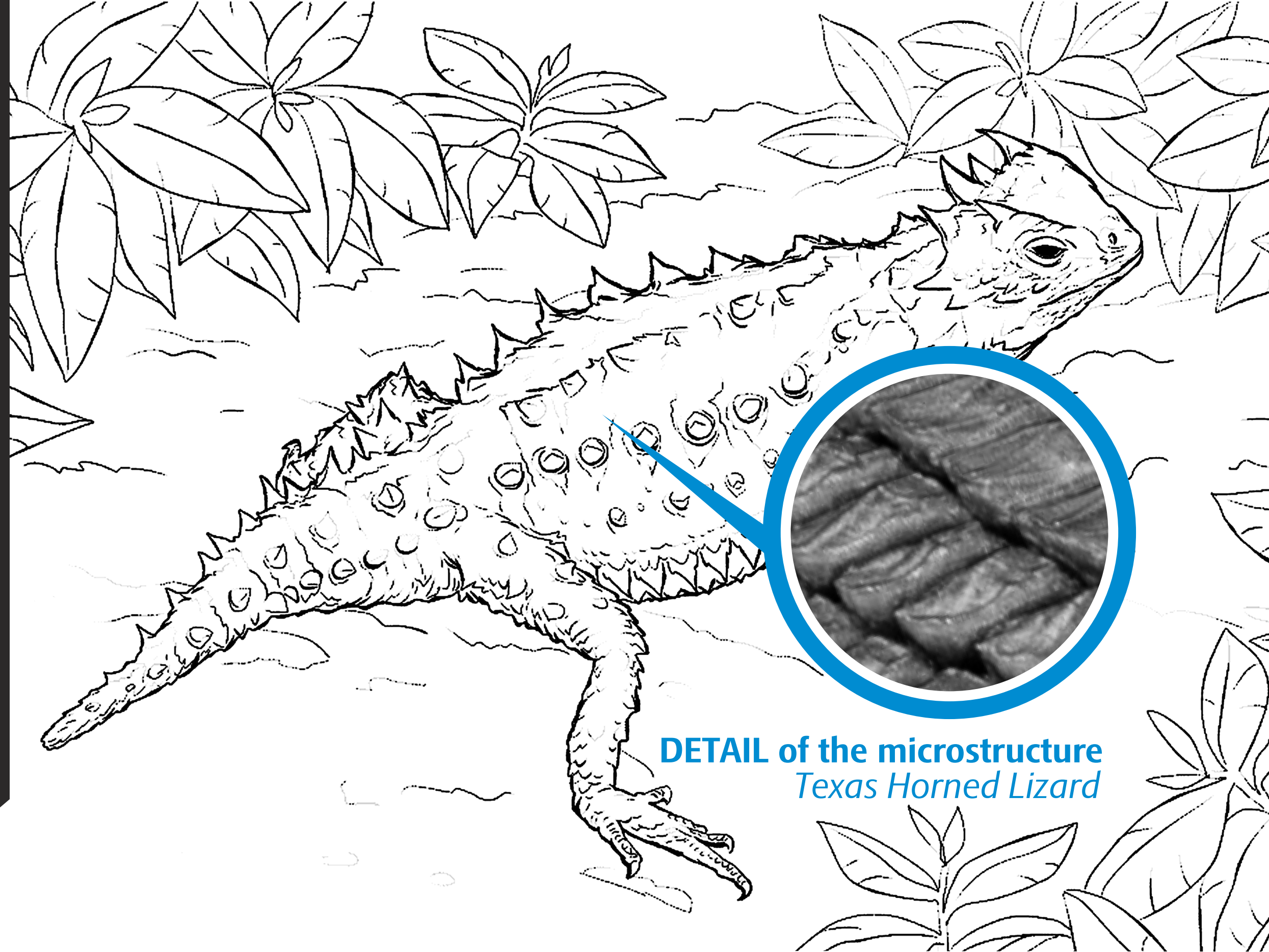




# BALCONY CULTIVATOR

Balcony Cultivator is a self-sustaining system to help city-dwellers grow their own organic food, right on their balconies. Inspired by the Texas horned lizard's ability to collect water and moisture with their skin, this device provides a way to grow food for those without access to green space and offers an alternative growing solution for drought-prone areas.

Our solution directly connects composting with the cultivation of bio-product, the protection of the environment following social interaction among all family members. The cultivation is easy, clear, aesthetic and innovative.



DETAIL of the microstructure  
Texas Horned Lizard

condensation, rain, dew, fog

water flows through the micro capillaries into the collecting channels

vaporized moisture from compost

drain valve

the irrigation part

the growth and production of vegetables

a compost

water

water collecting channel

capillaries

water channel

ZOOM of micro-structured surface

capillaries

condensation, rain, dew, fog

PMMA

the outer surface

the inner surface

The section of a cupola

We decided to transform this biological mechanism into a cupola that derives moisture obtained by water vapor condensation directly to the roots of plants.

## The flow of moisture in the device

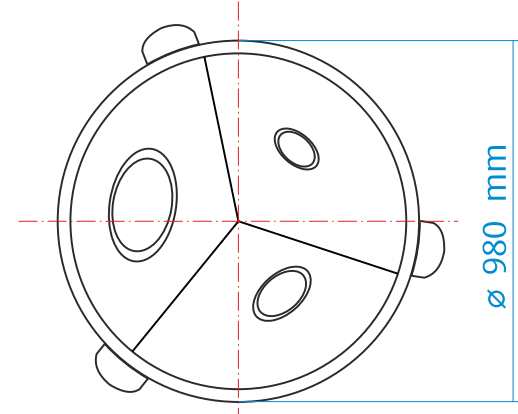
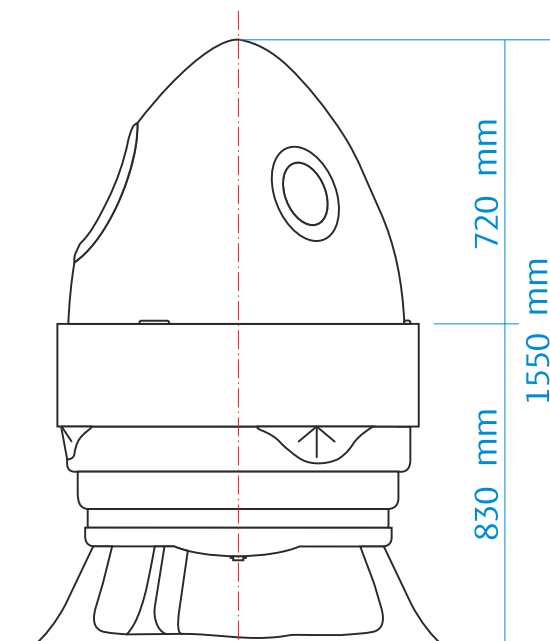
The whole proposed irrigation system is also supported by the moisture of compost itself. The shape of the cultivator was proposed according to natural laws pre-determining its required functional parameters.



a

b

c



BIOMIMICRY  
GLOBAL DESIGN  
CHALLENGE

FOOD SYSTEMS

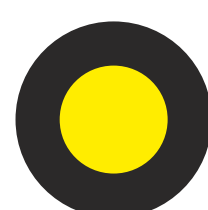
<http://challenge.biomimicry.org>

We have focused on the local food production problem.

People often complain about the fact that fruit and vegetables available in the supermarkets lack taste and flavor.

In the region of Central Europe more than 60% of people live in blocks of flats. Common people living in large cities have already forgotten to grow their own food. They lack gardens, time and they are often overburdened by work. That is why we have developed the idea, solution and activity:

**"Grow your own balcony bio!"**



People's Choice Award / \*October/4/2015  
Austin/Texas/USA

The Finalist of Biomimicry Global Design Challenge 2015 / Open Category

Team Members / Miroslav Chovan, Miloš Gejdoš, Miroslav Němec, Tomáš Gergel, Dávid Jurík, Aneta Pilušová  
Team Leader/ Zuzana Tončíková



TECHNICAL UNIVERSITY IN ZVOLEN

