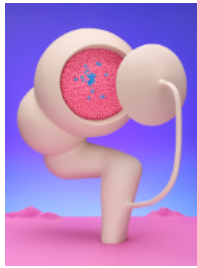


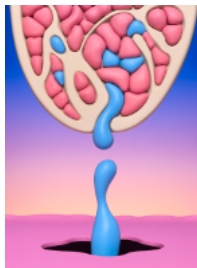
# Out of the Dark - Tracking metastatic cancer cells

Bela Borsodi, Artist Photographer  
Heinrich Kovar and Eleni Tomazou, Molekular Biologists at  
St. Anna Children's Cancer Research Institute in Vienna.



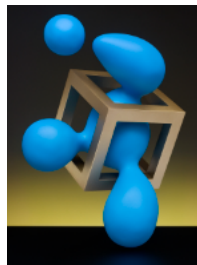
## 1. Detecting tumor cells in the bone

“Ewing sarcoma” is an aggressively growing cancer affecting mostly children, adolescents and young adults. Although the origin of the disease remains unknown, the tumor most commonly develops in long bones such as the femur, and in the pelvis – cancer cells are indicated in blue.



## 2. Cancer cells escape into the circulation

Metastasis is the major threat to patients with solid tumors like “Ewing sarcoma”. At the beginning of the metastatic process, rare tumor cells (in blue) escape into the blood circulation before they extravasate and settle at a distant organ to grow a metastasis. The specific characteristics of circulating tumor cells are largely a mystery to the scientist.



## 3. Trapping circulating cancer cells

To better understand the metastatic process and find cures targeting metastasis, we need to get hold of disseminated tumor cells (in blue) to characterize and block them from further progression – a scientific, technological and clinical challenge.



## 4. Spotting cancer cells based on their genetic makeup

Cancer arises as a consequence of genetic perturbations causing aberrant cell function. "Ewing sarcoma", for example, is characterized by a specific rearrangement of two chromosomes (in green and orange) reshuffling two genes to form a new aberrant one which is unique to this cancer. The sensitive detection of the rearranged gene helps to spot and characterize rare circulating tumor cells in the patient's blood. This allows early detection of metastasis with largely non-invasive methods and, hopefully, timely treatment.