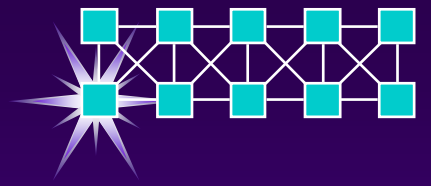
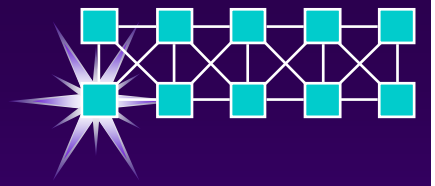
Medical Imaging Systems



- Radiography
- Tomography
- Magnetic Resonance Imaging (MRI)
- Nuclear Medicine
- Ultrasound
- Electrical Impedance Tomography
- **Breast Thermography**
- Others (**Elastography, Spectroscopy, Ophthalmology**)

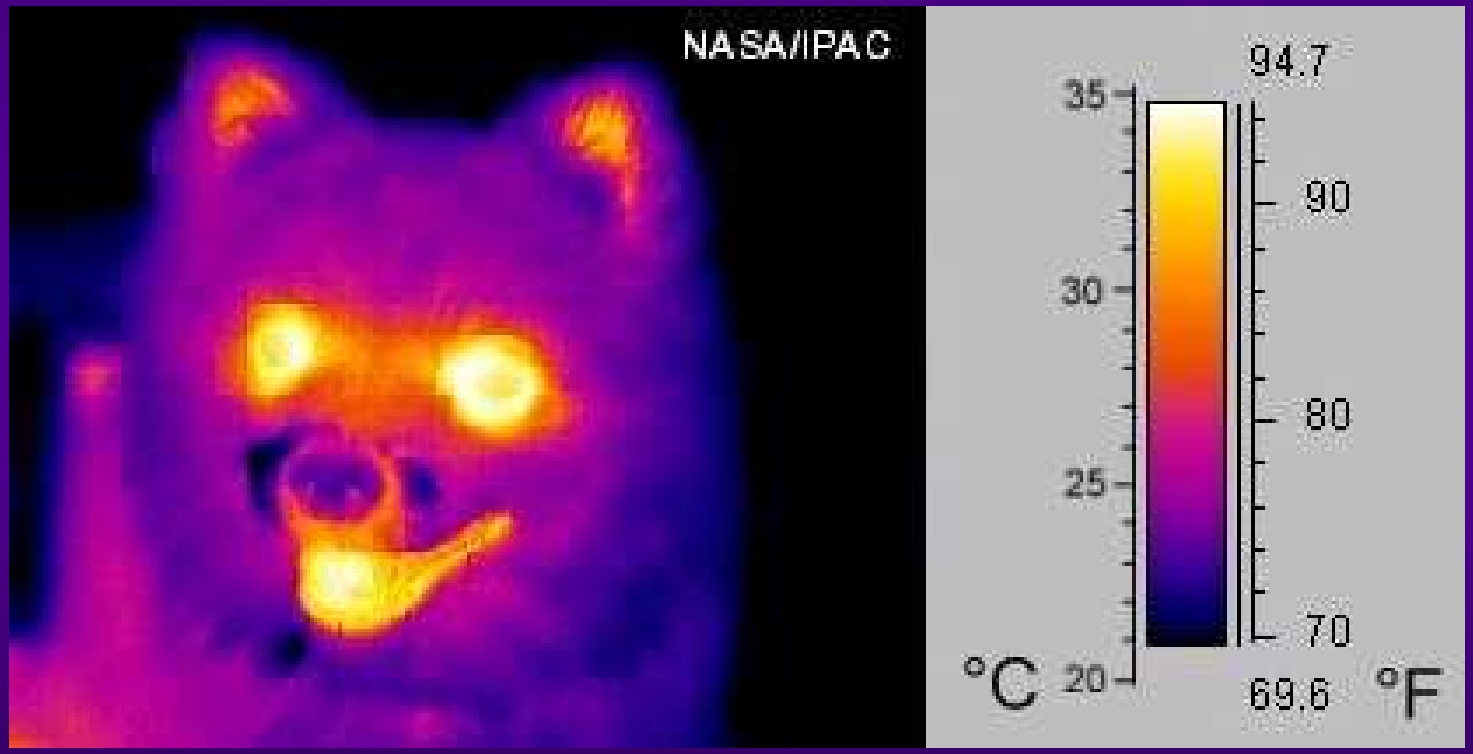
Breast Thermography



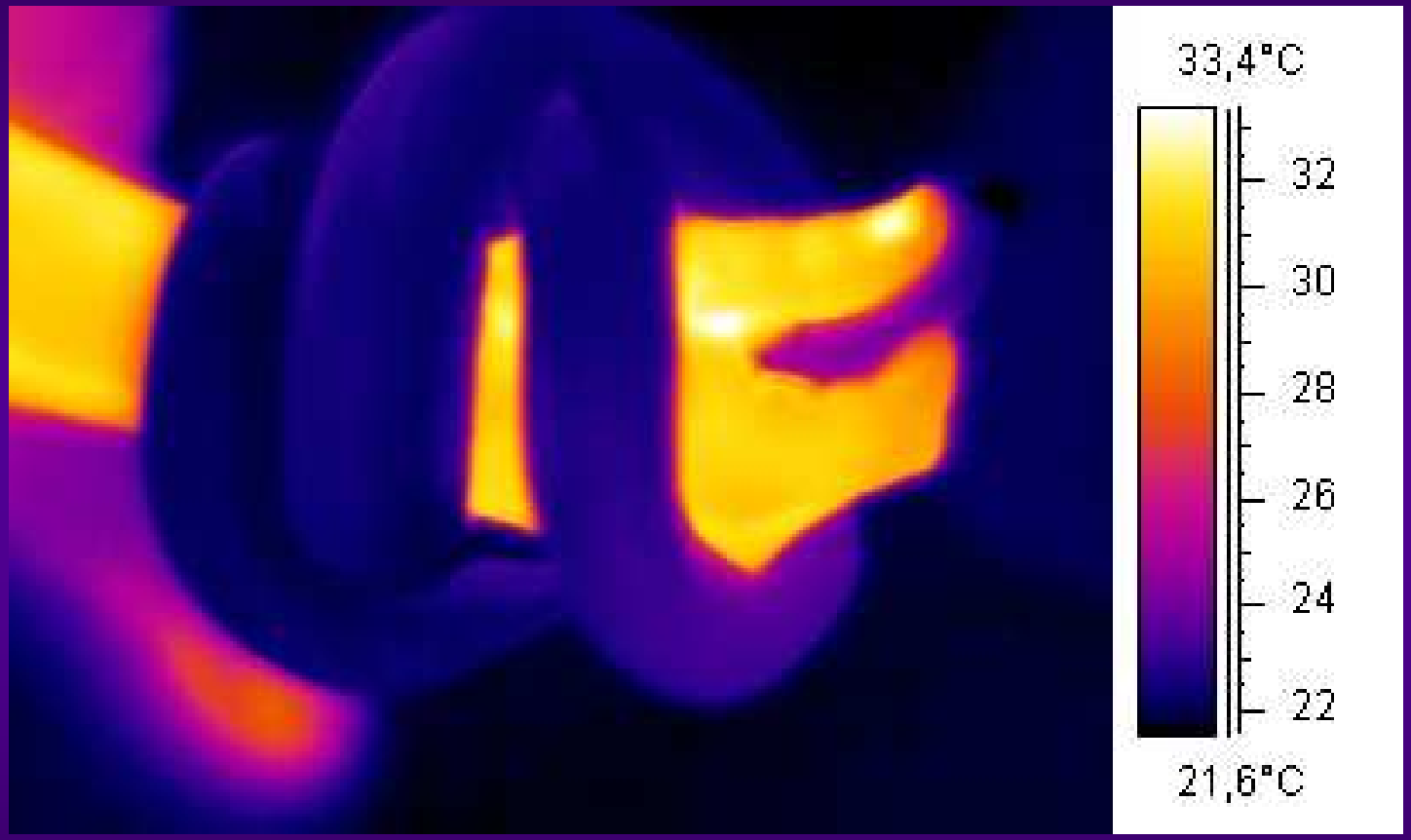
- **Digital infrared imaging**

- To detect the earliest signs of breast cancer and/or a pre-cancerous state of the breast

Examples of Thermorgraphy



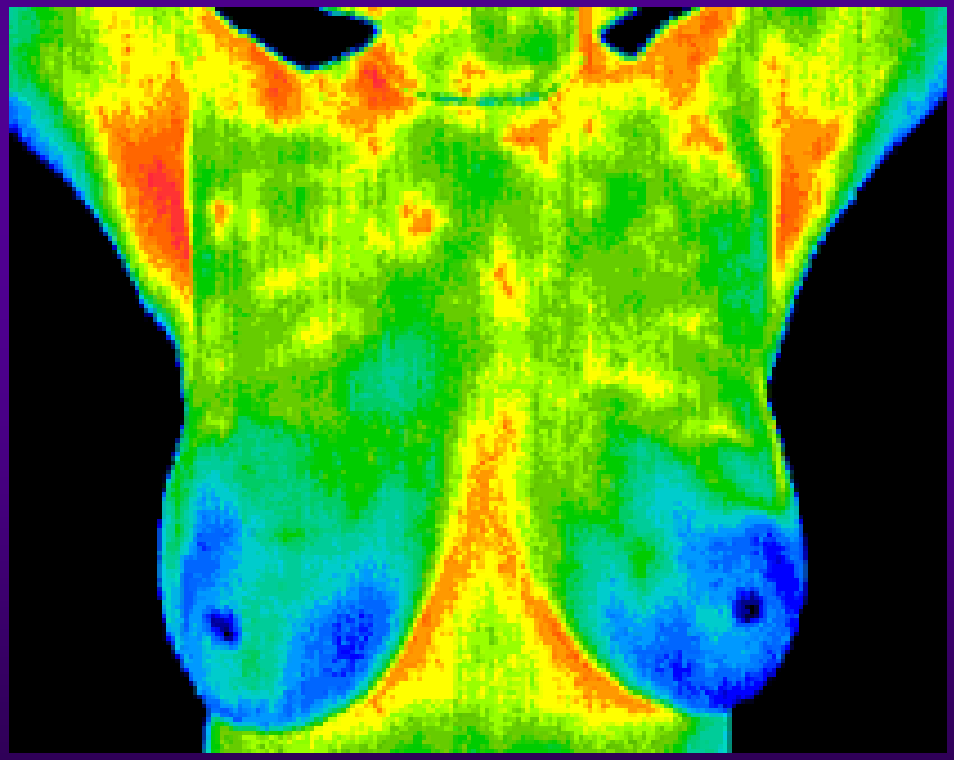

11,2°C
10
8
6
4
2
0,0°C

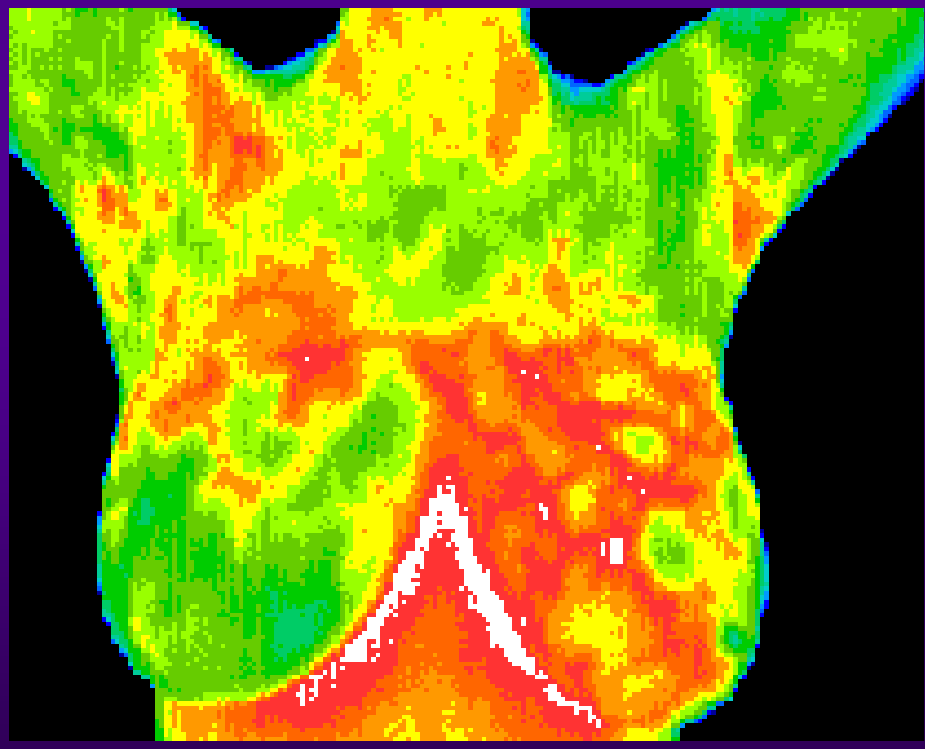


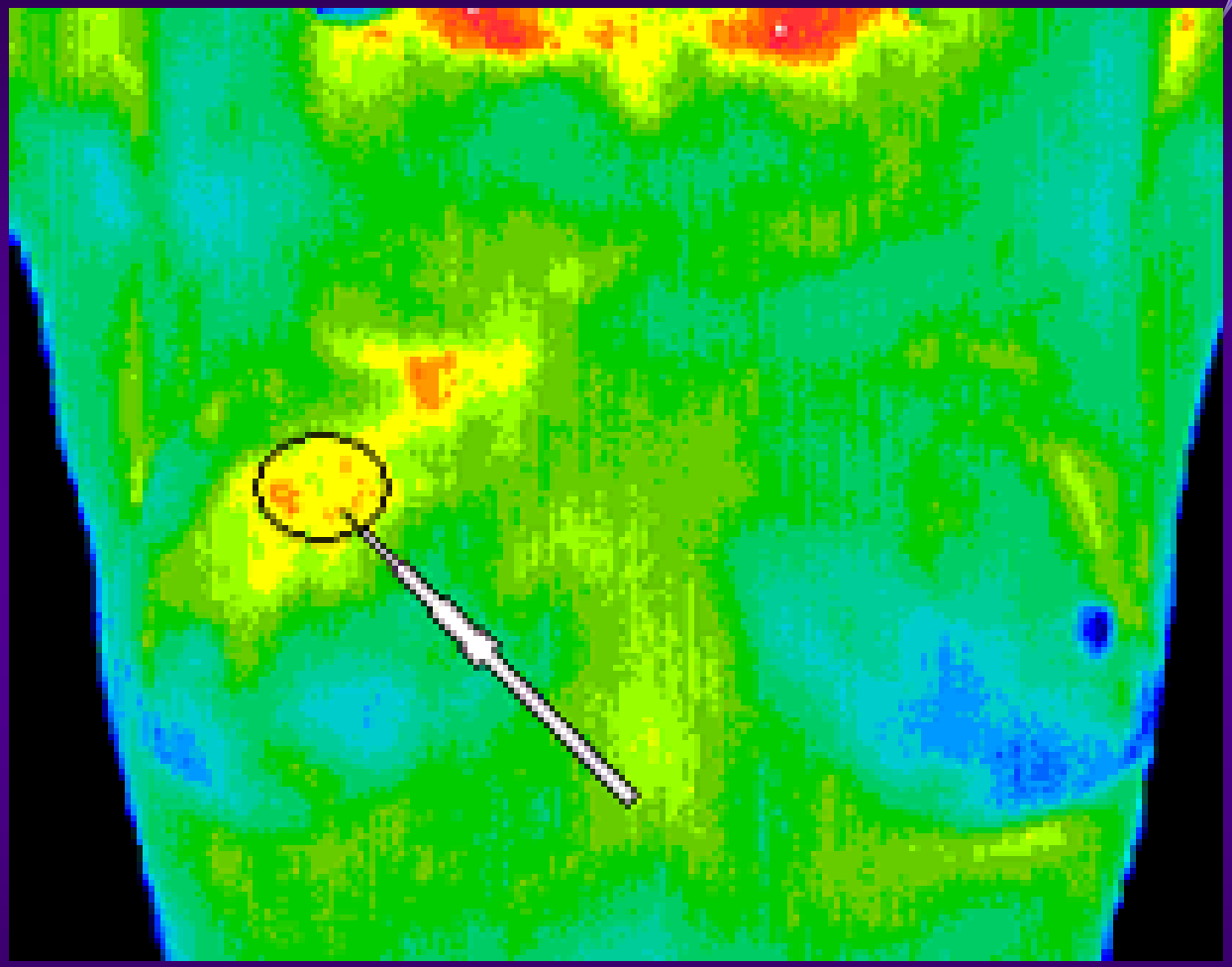
Thermogram of a snake held by a human

Medical Applications of Thermography

Fibrocystic Changes

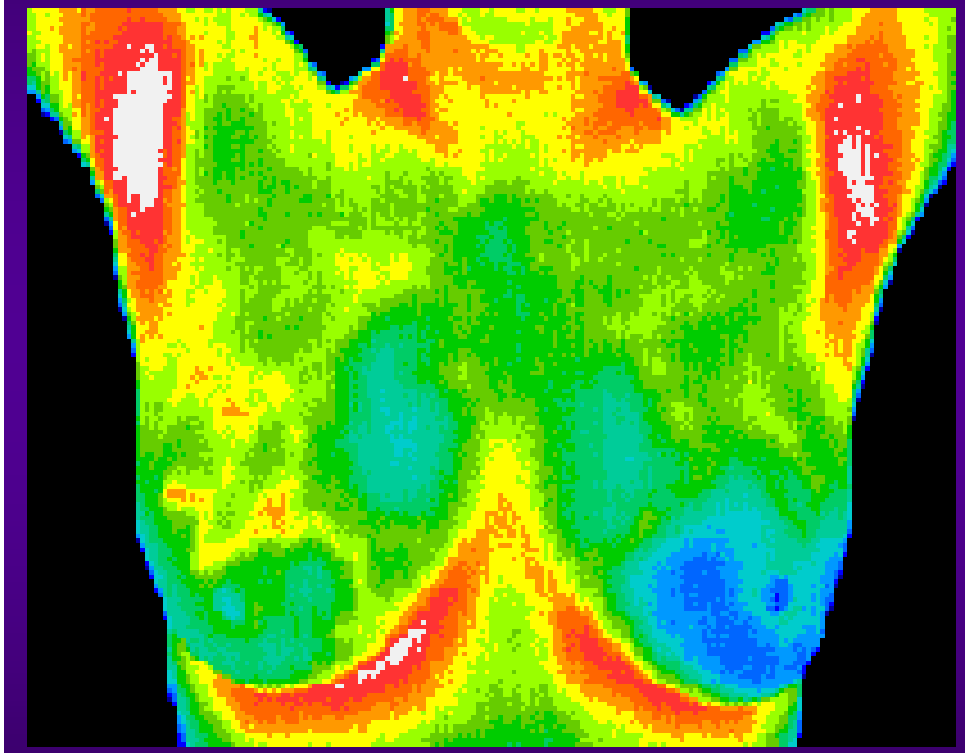




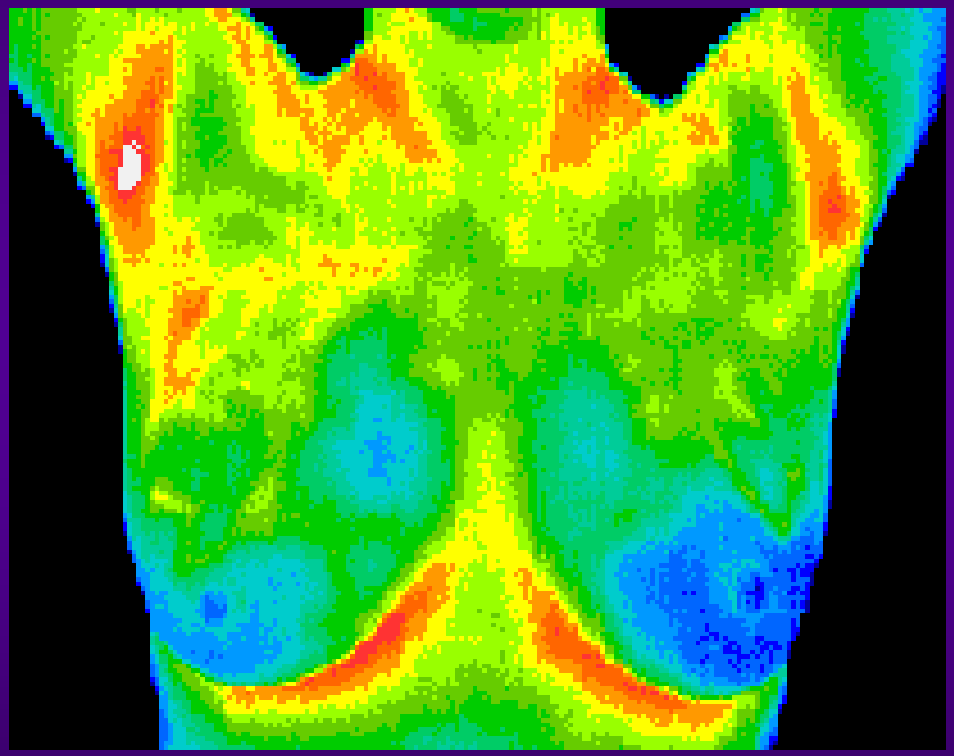


Early Stage Malignant tumor

Base Line

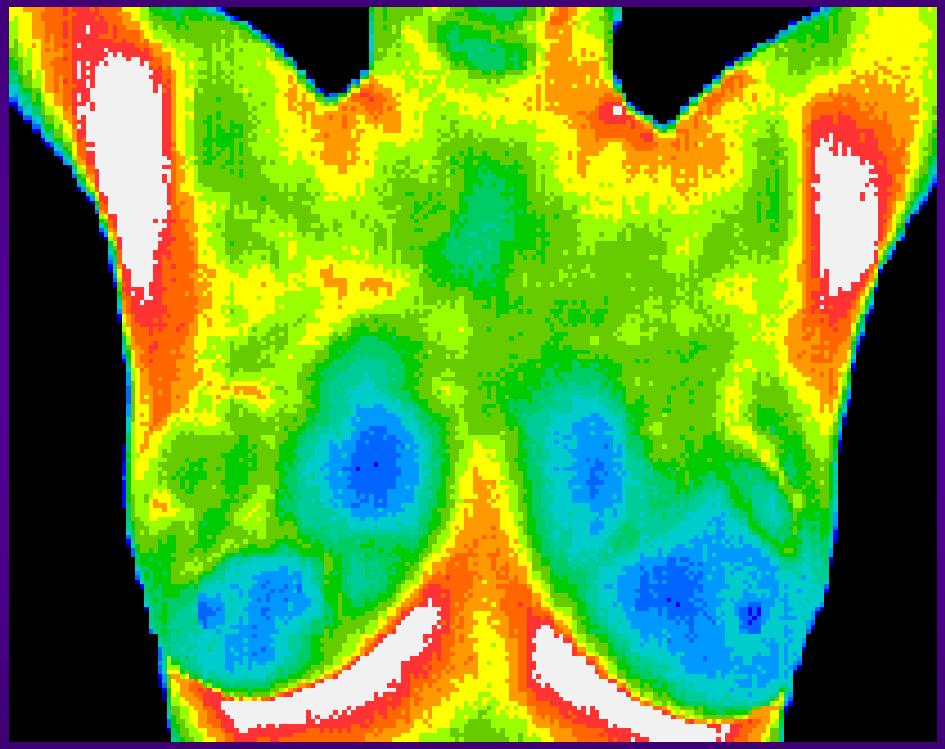


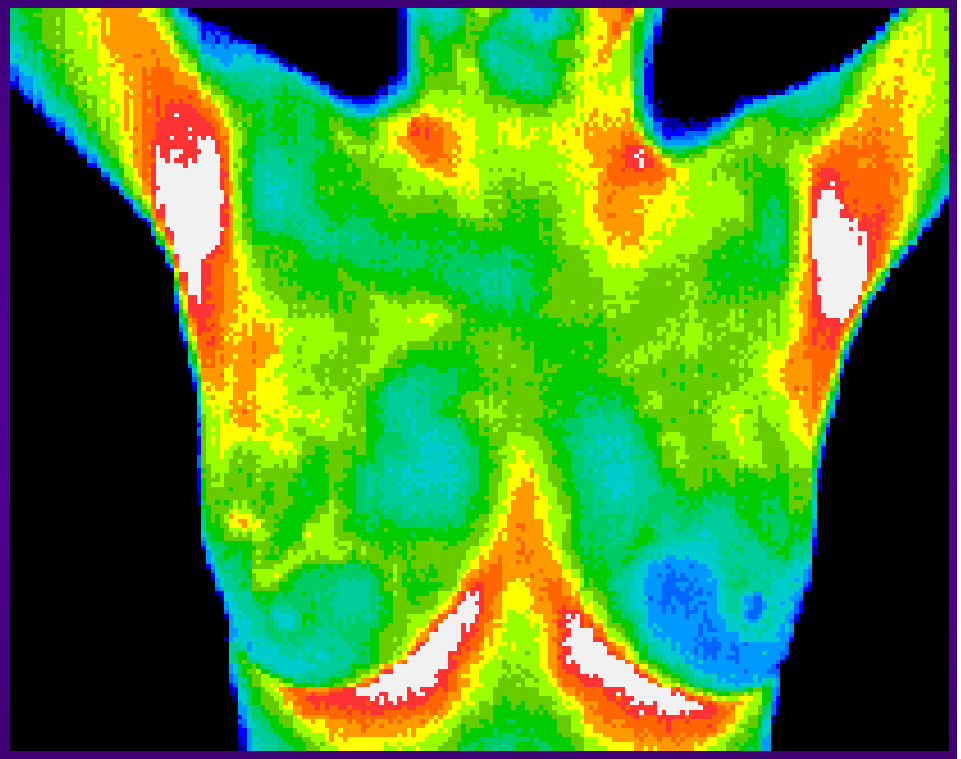
3 Month Follow-up



First Annual

Second Annual

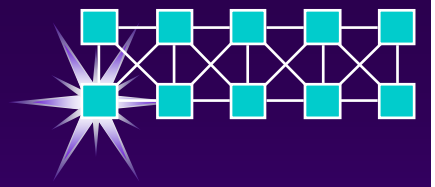




This patient's thermograms have remained stable for two years

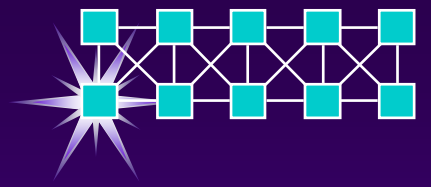
Principle of Thermography

- Based on the principle that **metabolic activity and vascular circulation** in both **pre-cancerous tissue and the area surrounding a developing breast cancer** is almost always higher than in normal breast tissue.



- Cancerous tumors require an ever-increasing supply of nutrients
- Therefore, increase circulation to their cells
- Results in an increase in regional surface temperatures of the breast.

- **Digital infrared imaging uses extremely sensitive medical infrared cameras**



- Because of DII's sensitivity, these temperature variations may be among the earliest signs of breast cancer and/or a pre-cancerous state of the breast.