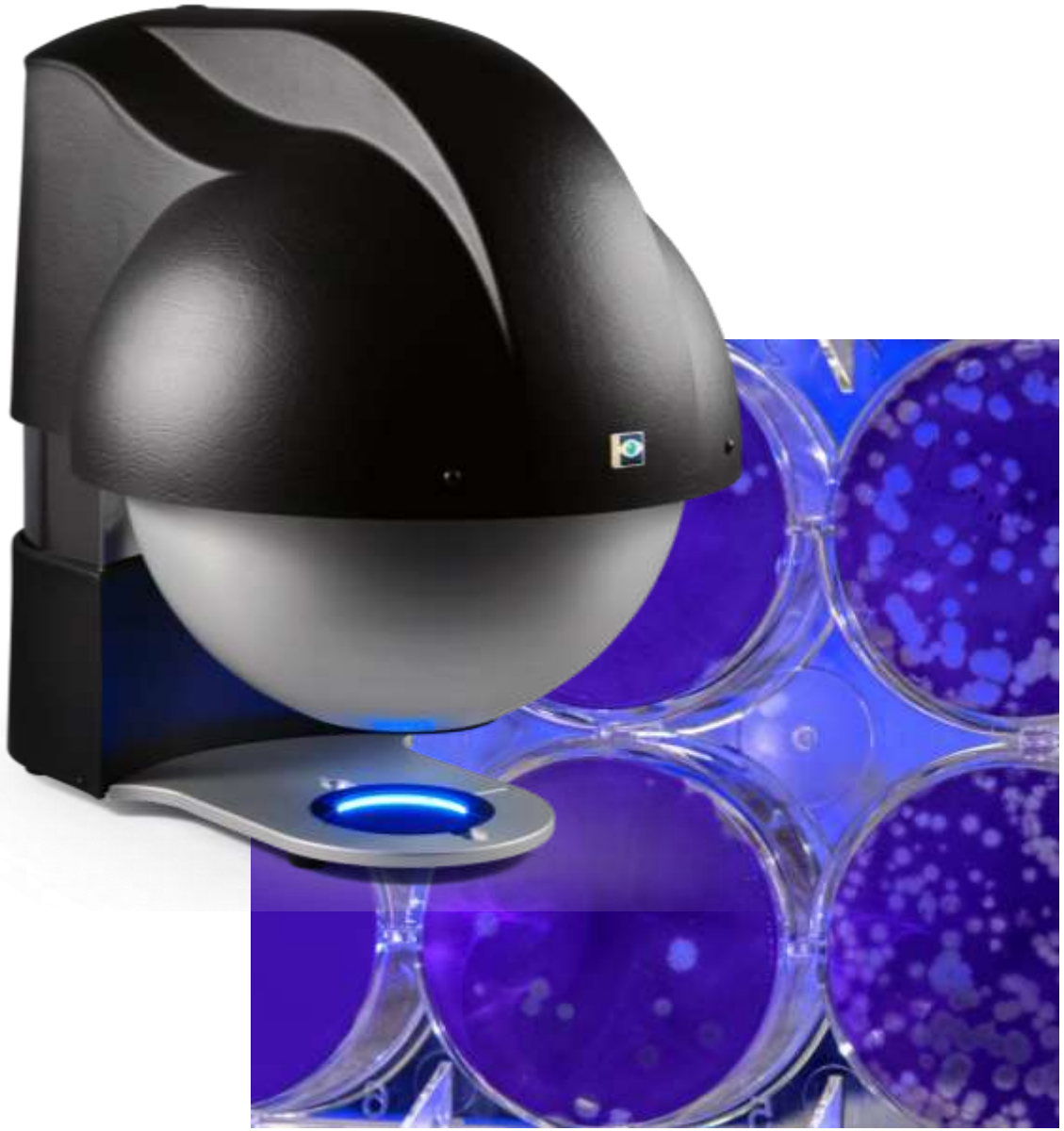


VideometerLab for Microbiology & Colony counting

We measure what you see – and beyond

ABOUT US

Videometer

- Spectral imaging company
- Founded 1999
- Products
  - Lab instruments,
  - Turn-key in-line systems, and
  - R&D projects
- App. 700 imaging R&D projects since 2000
- In-line 24/7 spectral imaging since 2002
- Based in Copenhagen, Denmark
- Partnerships worldwide

OUR LEGACY

1999

The beginnings

Videometer was co-founded by Jens Michael Carstensen and 7-Technologies in 1999, as a spin-off from the Technical University of Denmark. The first patent application was filed.

2000

Project-based

In 2000, Videometer began its project-based activity. During these years, the company's main focus was set on custom-made vision systems for in-line and on-line quality control.

2018

A new era

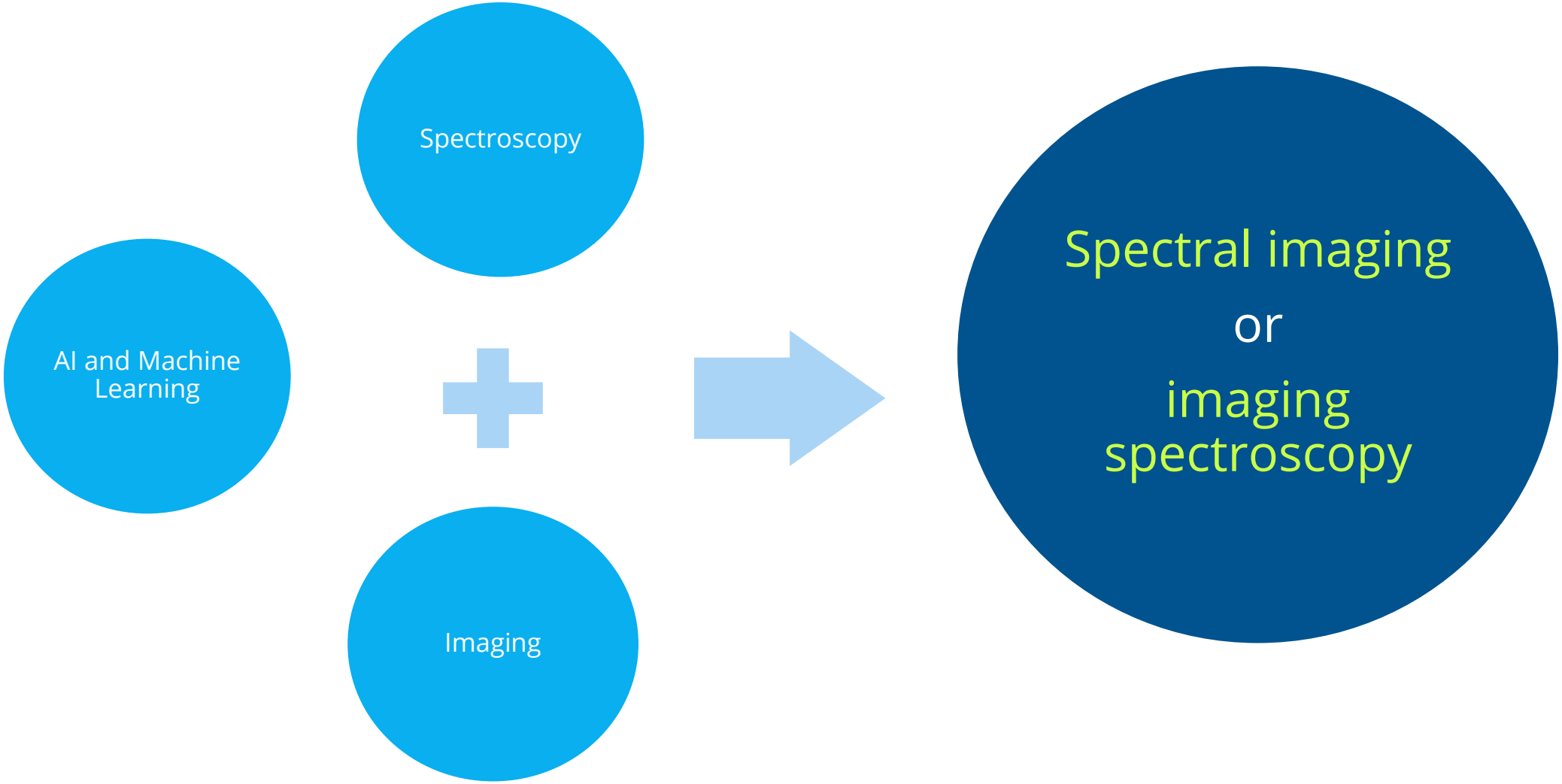
In 2018, Videometer's structure underwent new developments both in terms of strategy and structure. This year marked the beginning of a new era for the company, in terms of focus on instruments.

2020s

Today

Today, Videometer is a leading provider of spectral imaging solutions worldwide, selling both spectral imaging instruments and custom-made vision systems. Videometer is synonym of excellence and innovation in its field.

SPECTRAL IMAGING



WHAT COLOR IS THE CAR?

APPEARANCE

=

CHEMISTRY

X

PHYSICS

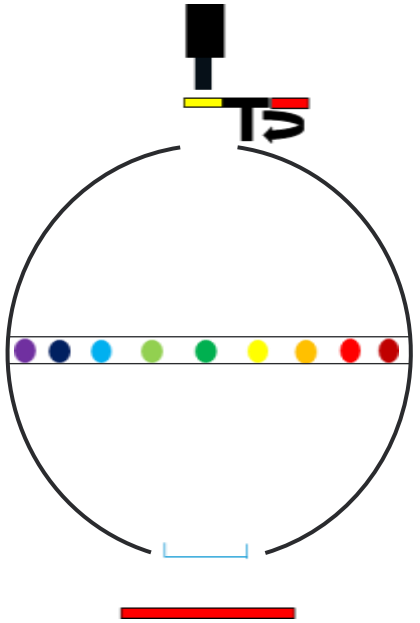
X

ENVIRONMENT

X

ILLUMINATION

LED BAND SEQUENTIAL SPECTRAL IMAGING



Camera and lens

Emission filter changer

Integrating sphere

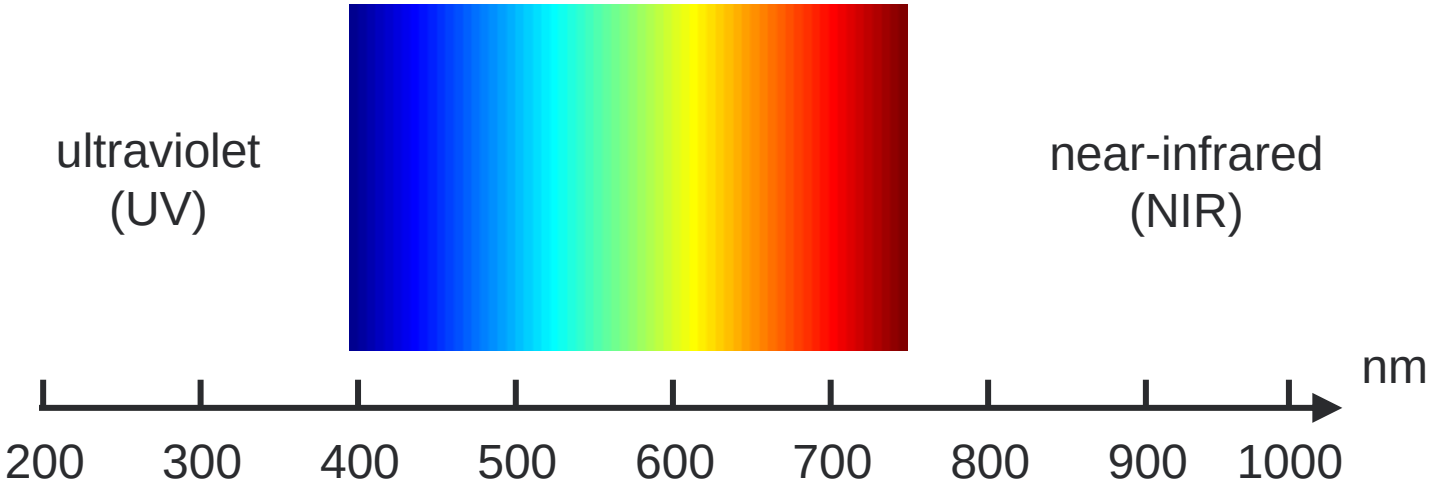
LEDs of multiple wavelengths

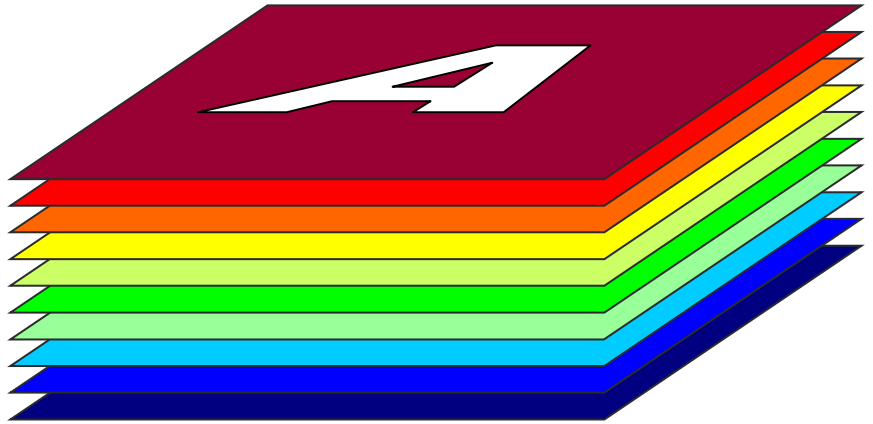
Sample is placed in target opening

Backlight or background

- LEDs: Stable, durable, large selection, rapidly developing technology
- Up to 20 different high-resolution bands acquired sequentially in 0.5-1.0 seconds
- May be combined with emission filters, backlight, and darkfield illuminant
- Combined reflectance spectral imaging and fluorescence spectral imaging possible!

SPECTRAL IMAGE

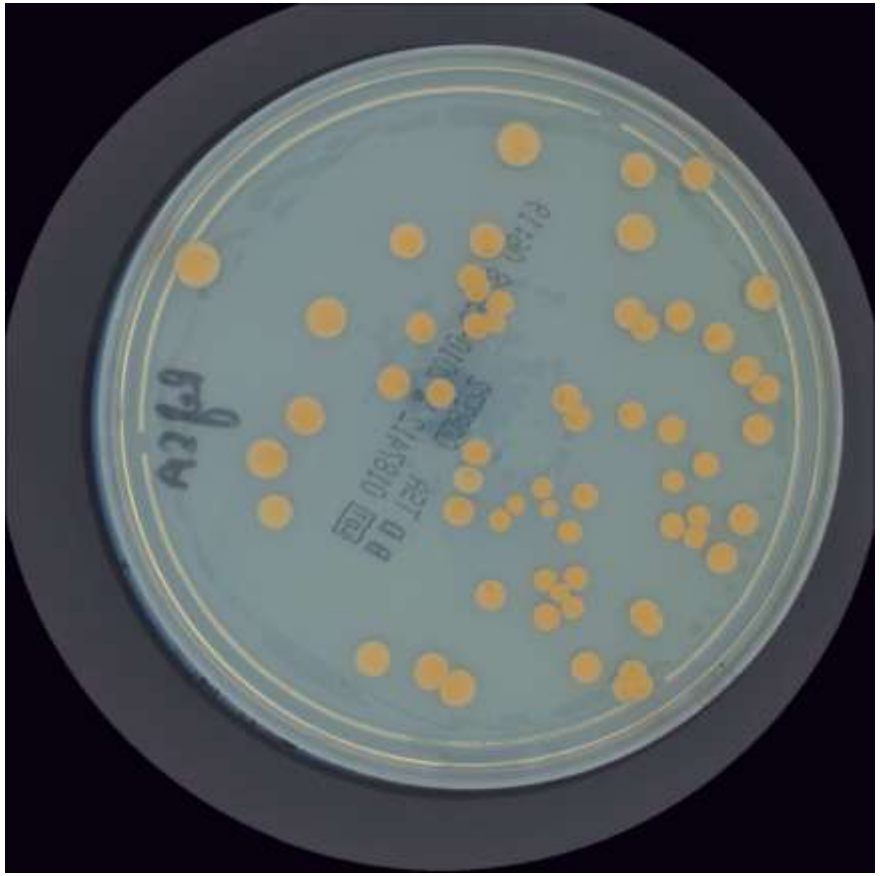




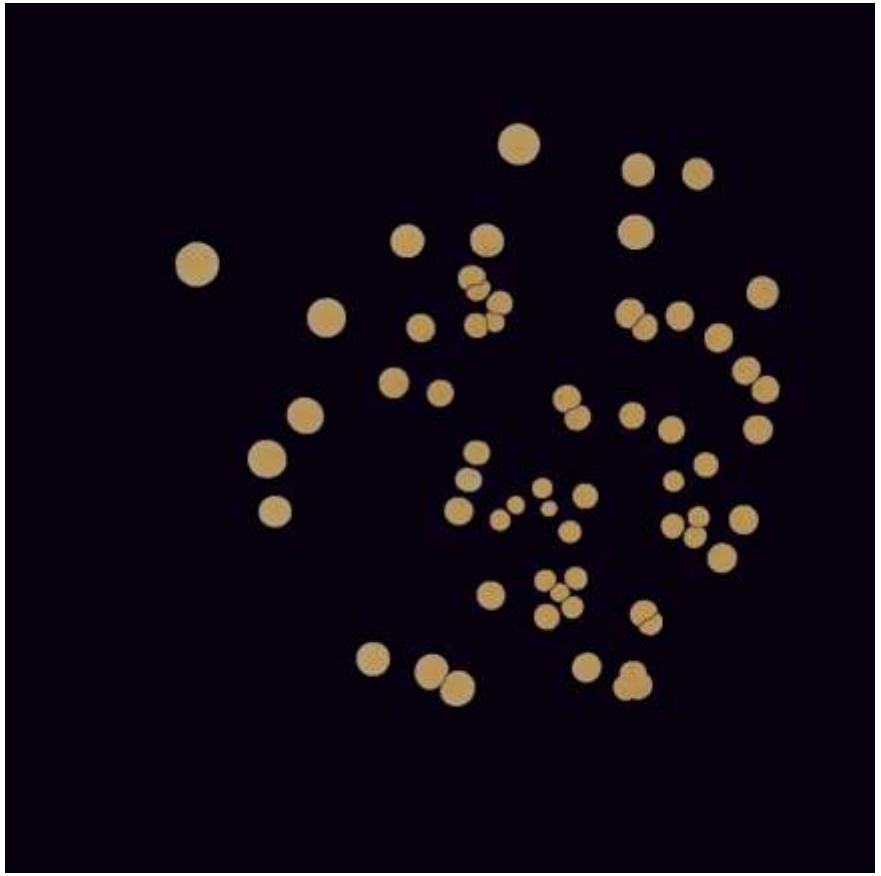
N images obtained at N wavelengths

Microbial and plant metabolites	Accurate color assessment and pigment concentration	Pigment baseline, moisture, fat, etc.	Spectral image is typically a large data structure of 100 MB to 10 GB

STAPHYLOCOCCUS AUREUS ON TSA

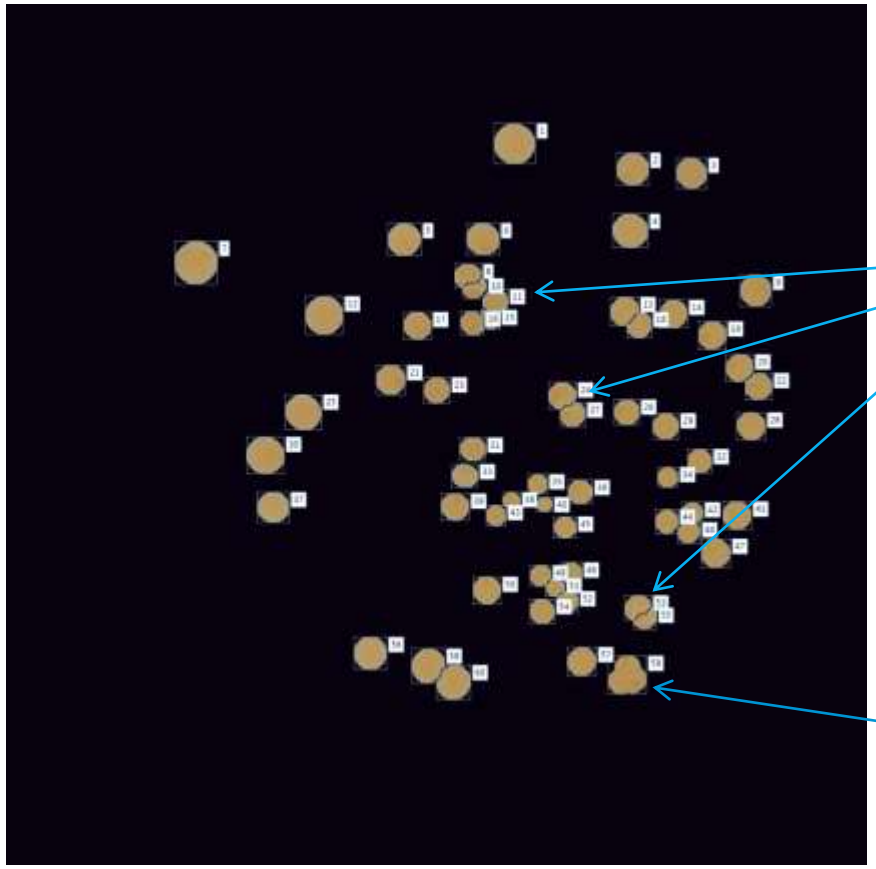


Colony plate



Colonies segmented

COLONY COUNTING ON TSA



Colonies identified and counted

Touching colonies are separated

Dense clusters have to be dealt with separately

60 colonies including one 3-colony cluster

WATER PCA EXAMPLE

Image: 105190382101
VideometerLab count = 12
Manual count = 11

WATER PCA EXAMPLE

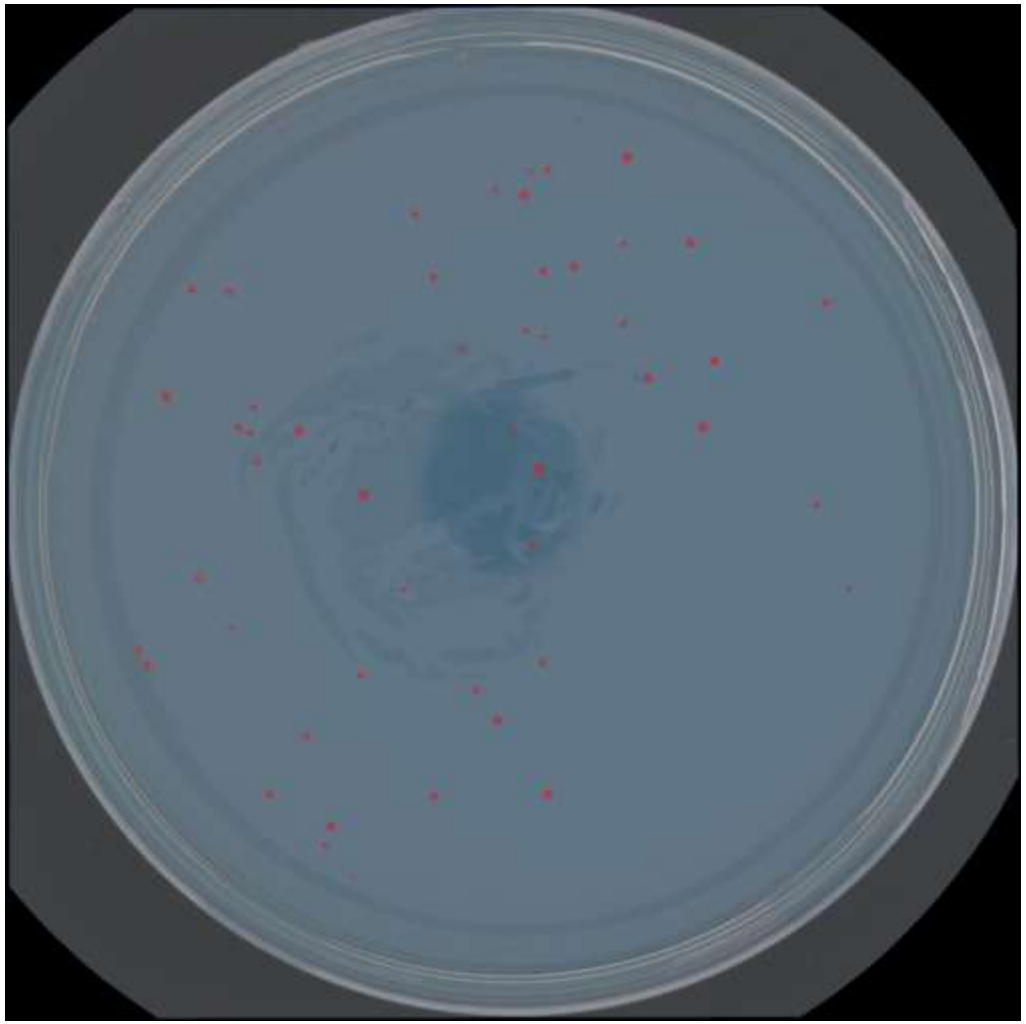
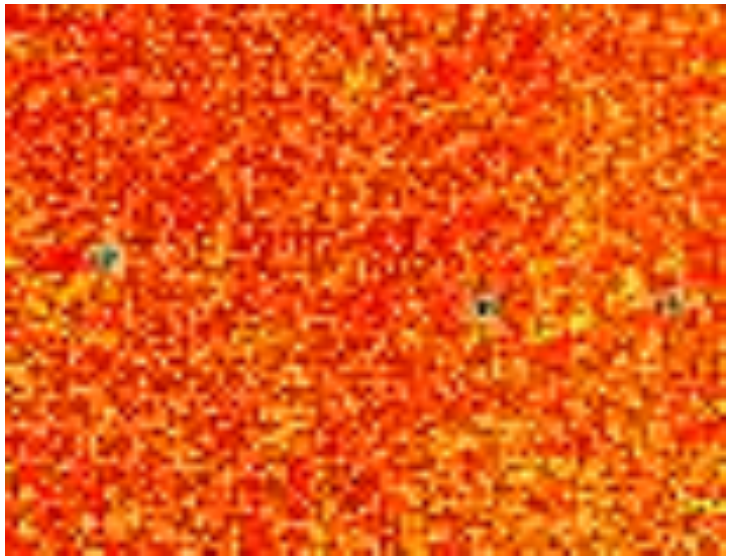


Image: 775732012102
VideometerLab count = 186
Manual count = 189

SEGMENTATION MODEL

Magnification of a small area with 3 colonies.

Original image



Mahalanobis image

FALSE/TRUE COLONIES?

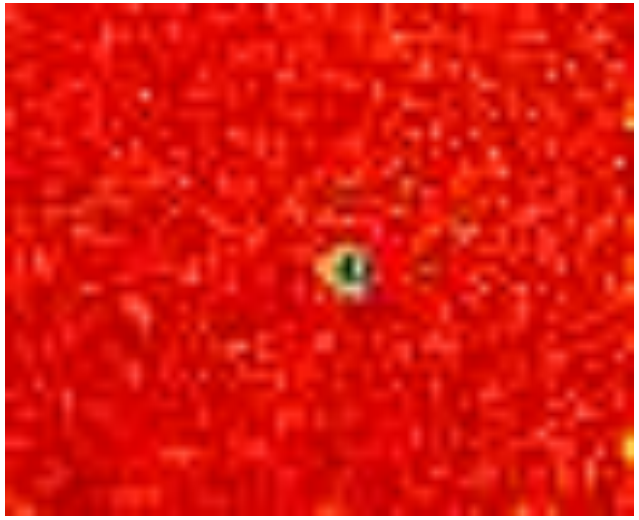
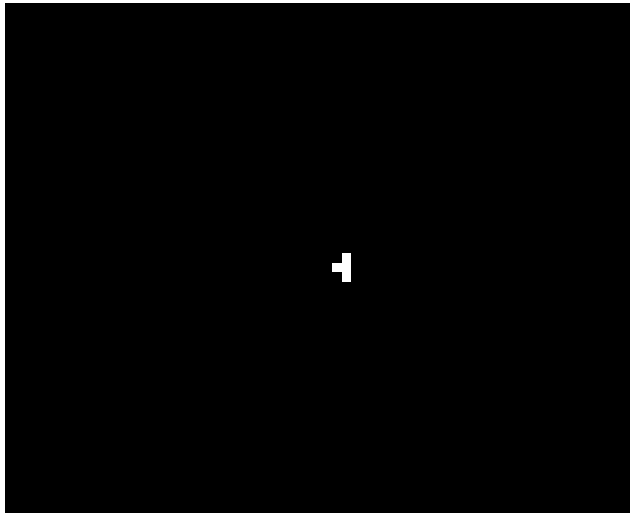
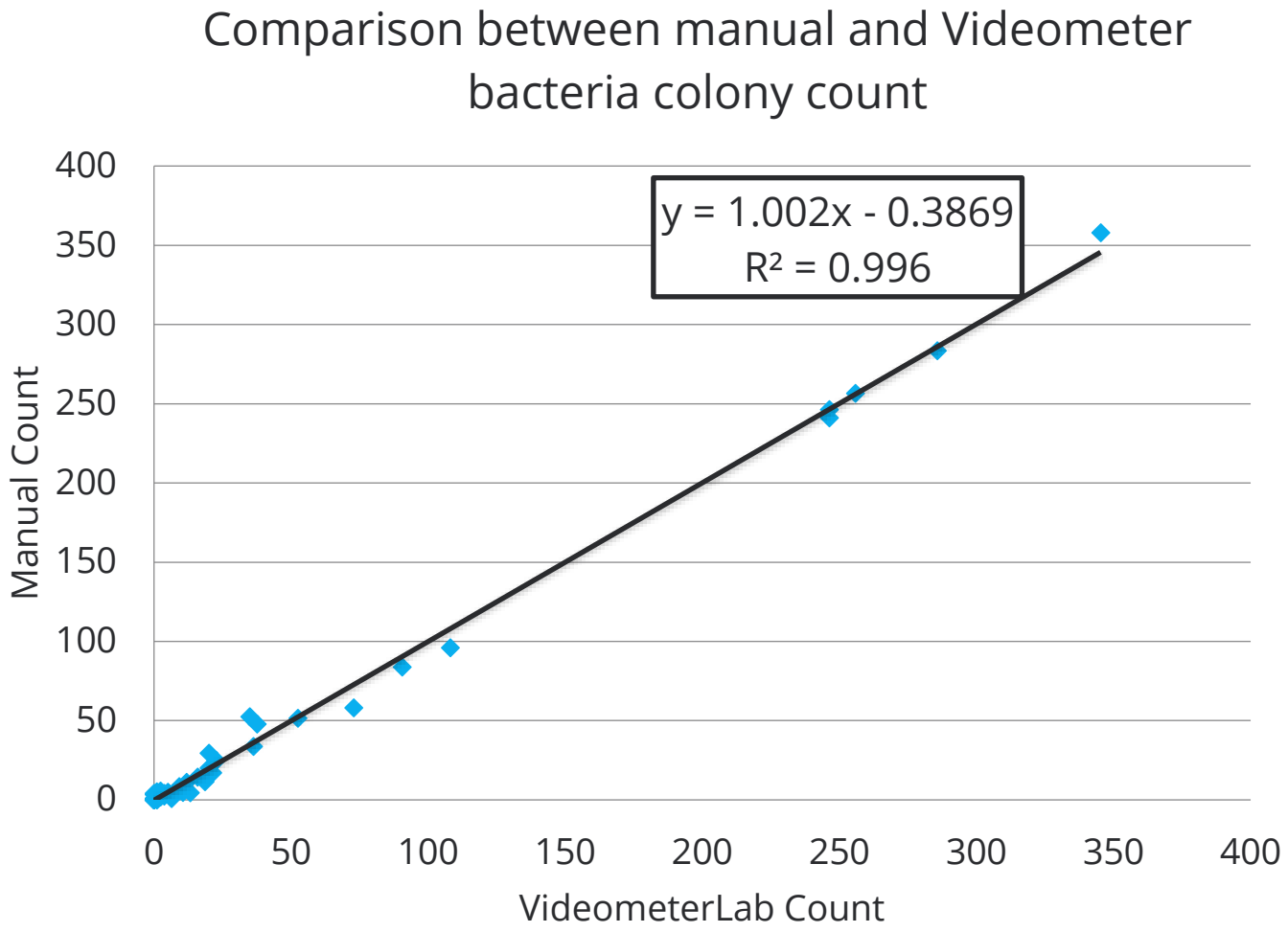


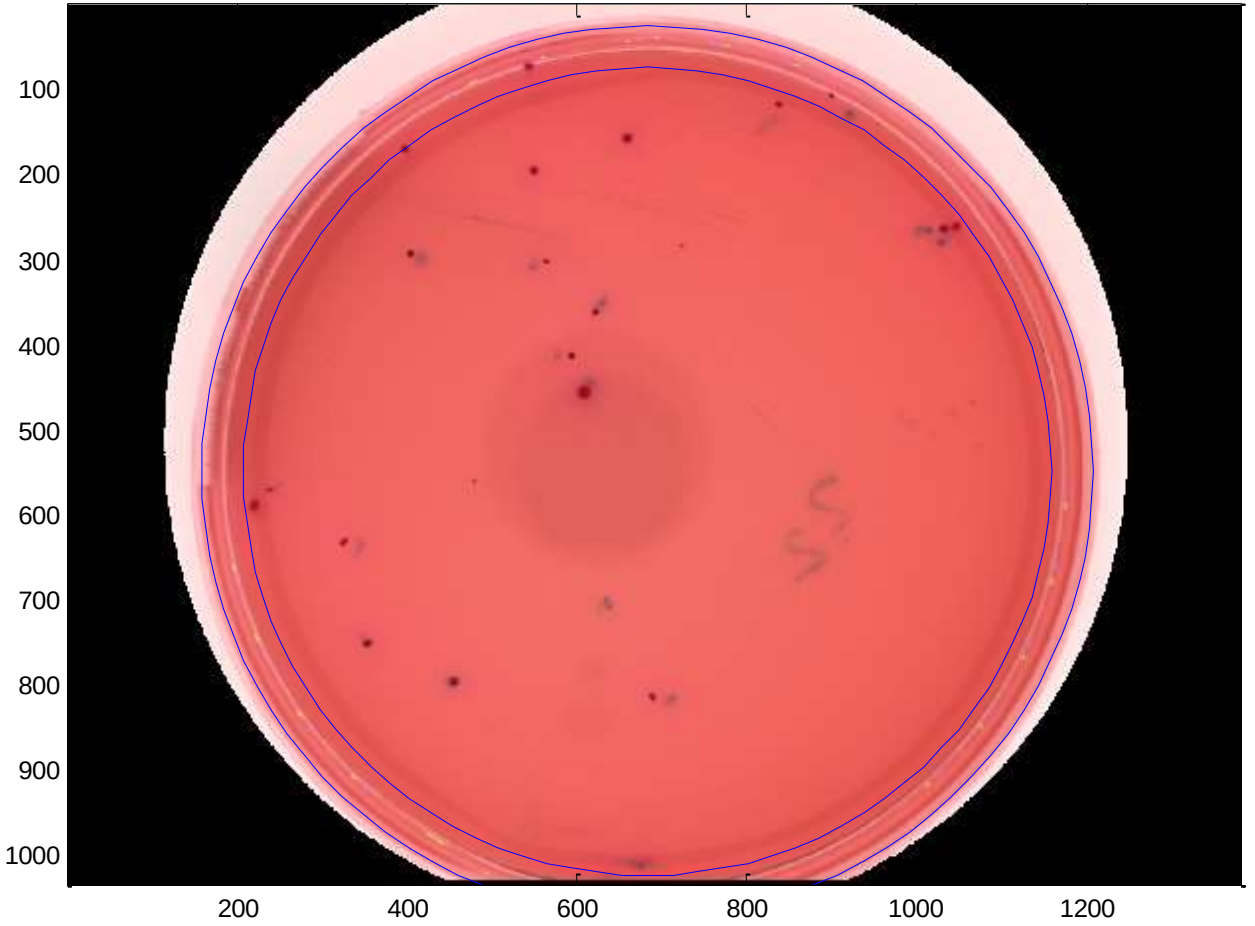
Image: ST0005112102



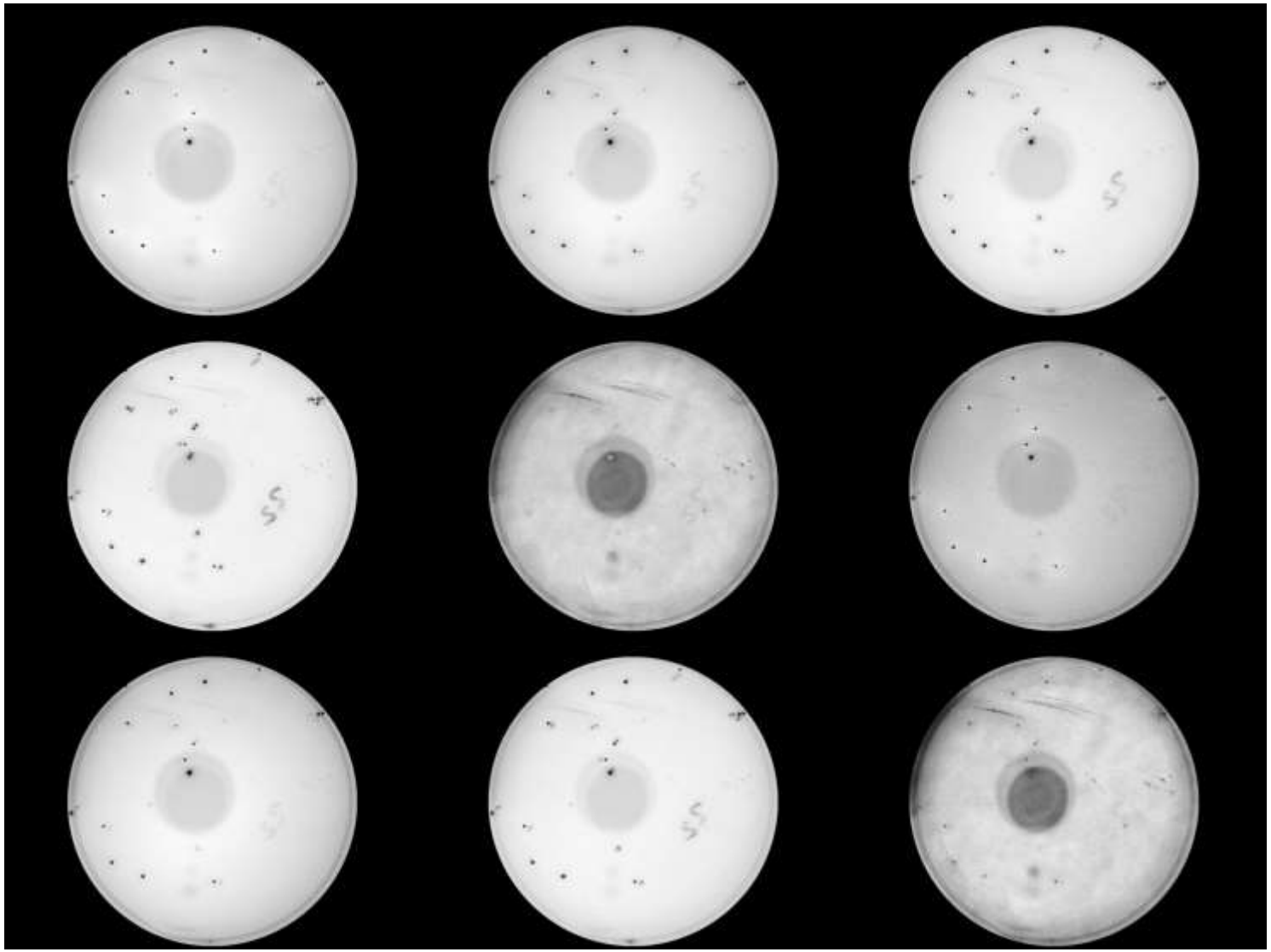
PERFROMANCE STUDY – JUNE 2009



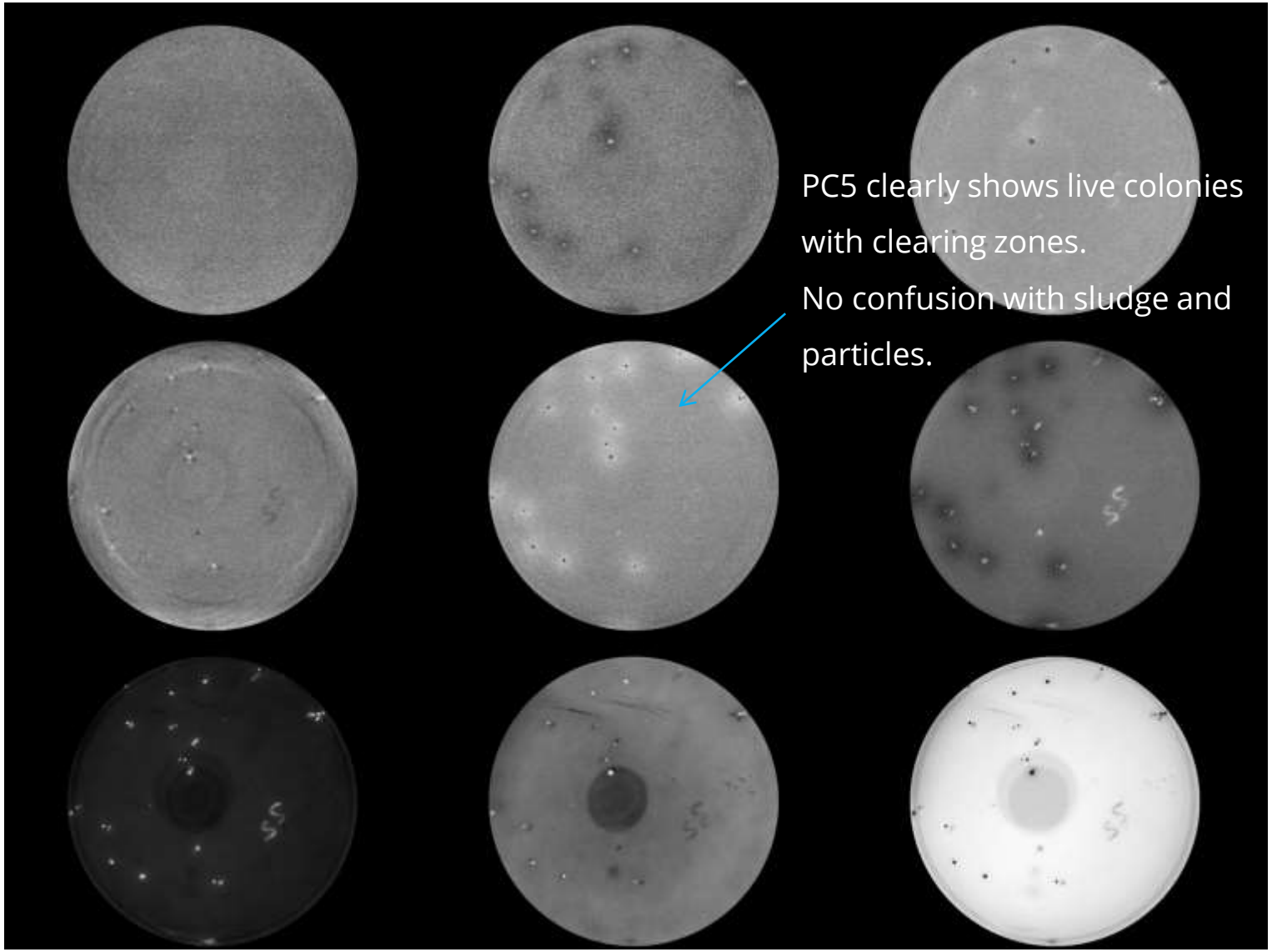
VRB PLATE (RGB)



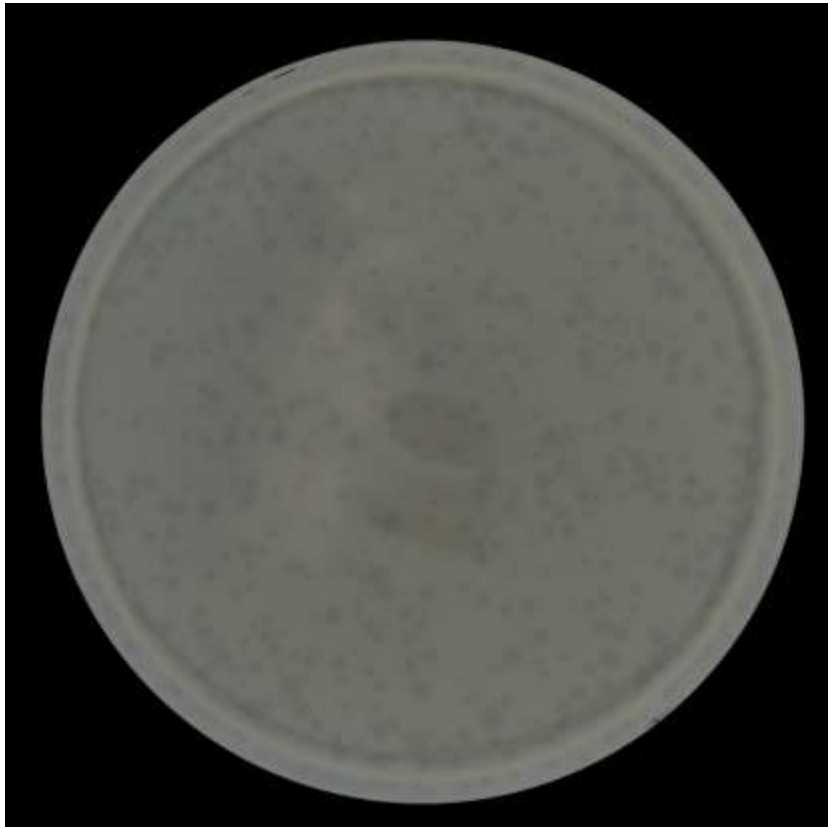
VRB PLATE (NINE SPECTRAL BANDS)



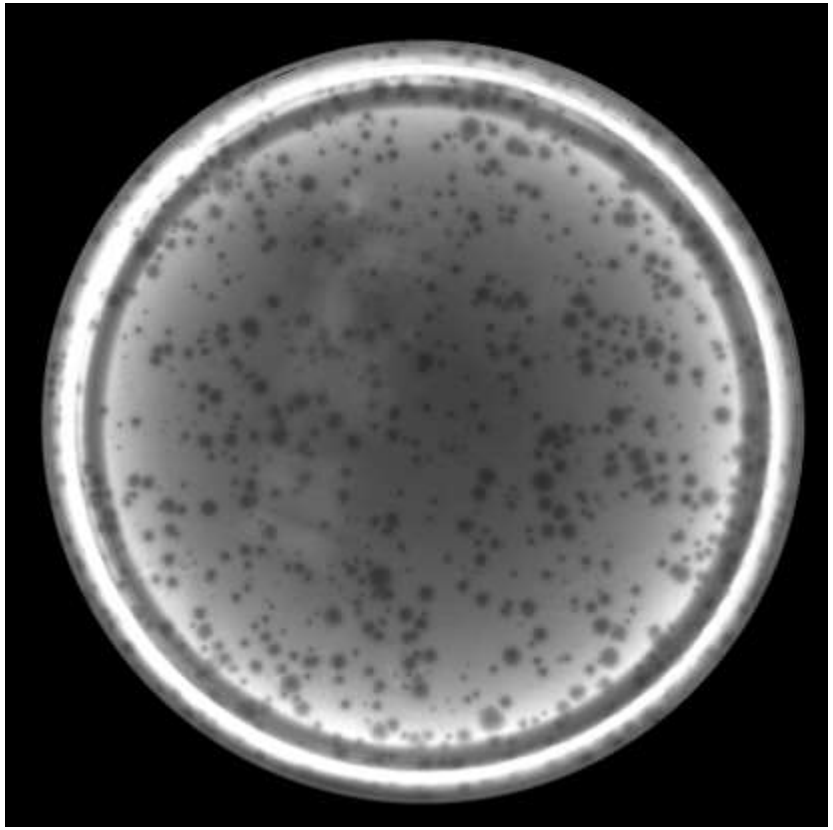
VRB PLATE (PRINCIPAL COMPONENTS)



VIRAL PLAQUE PLATE

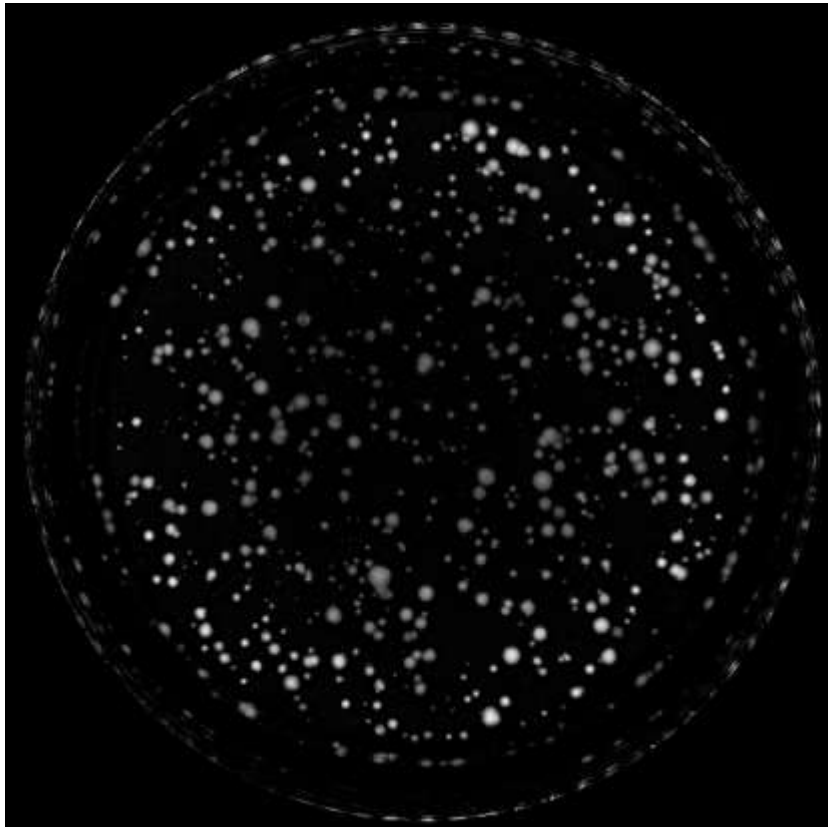


sRGB diffuse frontlight

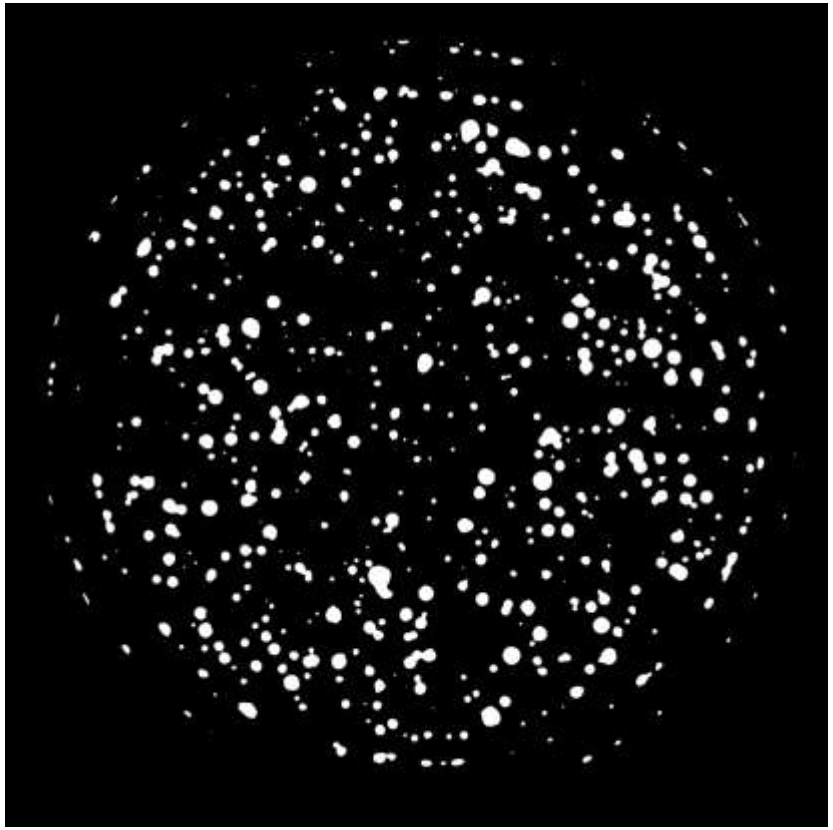


Darkfield backlight

PLAQUE SEGMENTATION

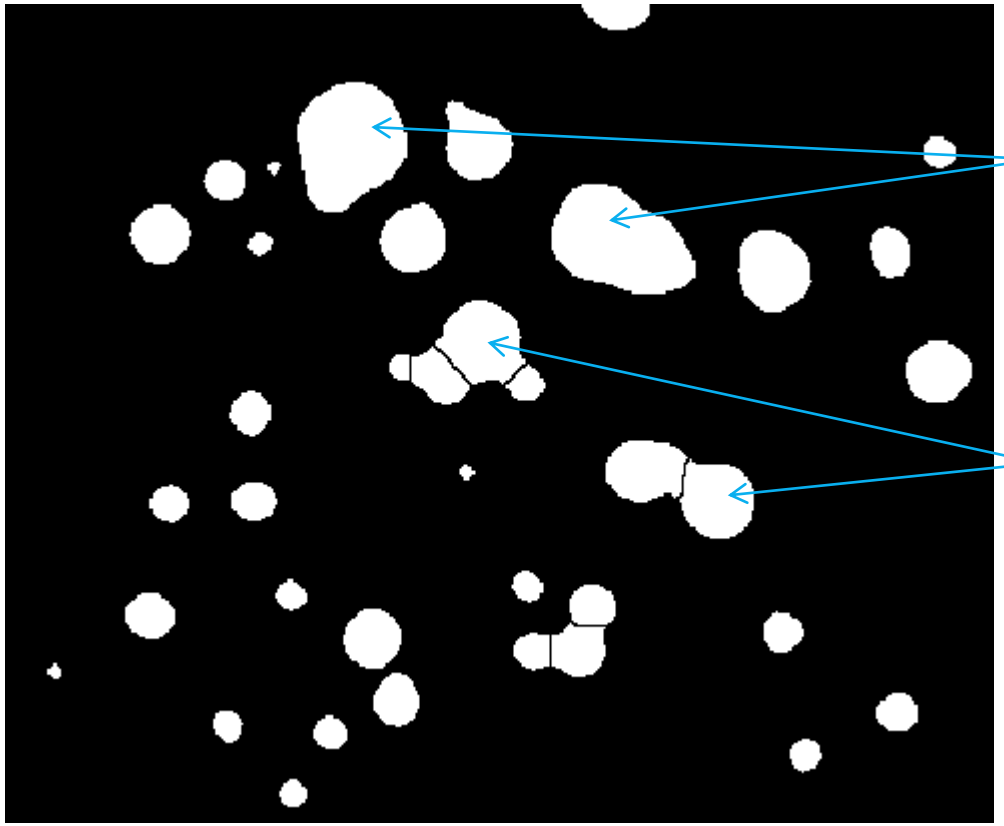


Plaque enhancement



Plaque segmentation

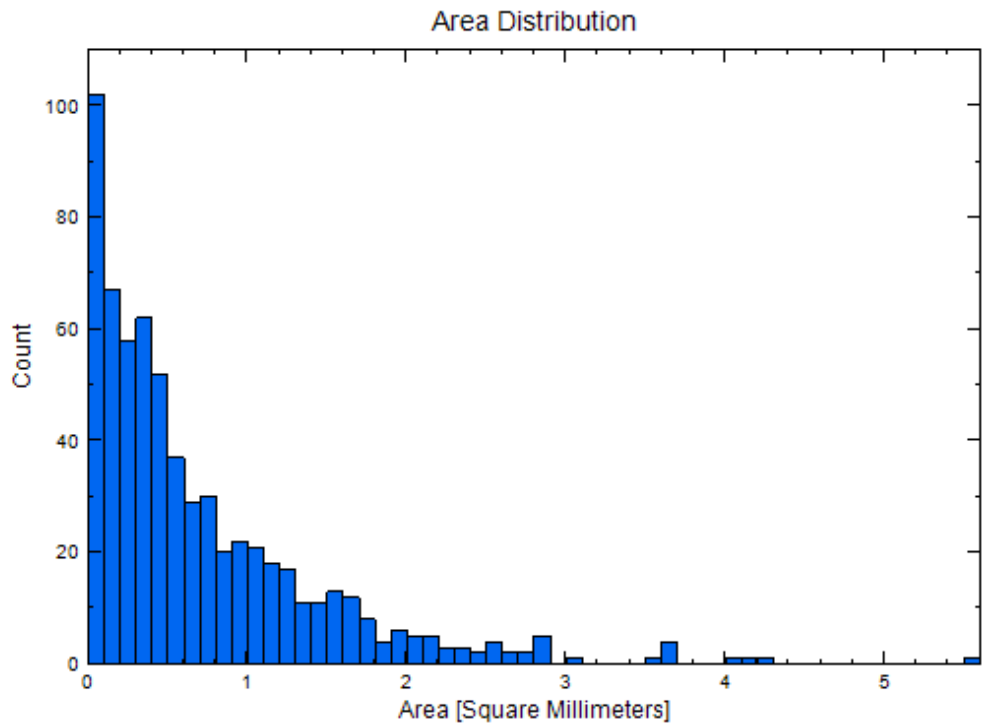
PLAQUE SINGULARIZATION



PLAQUE COUNTING AND SIZING

Count	641 objects
Min. Area	0
Max. Area	5.6
Mean Area	0.71
Total Area	455.21

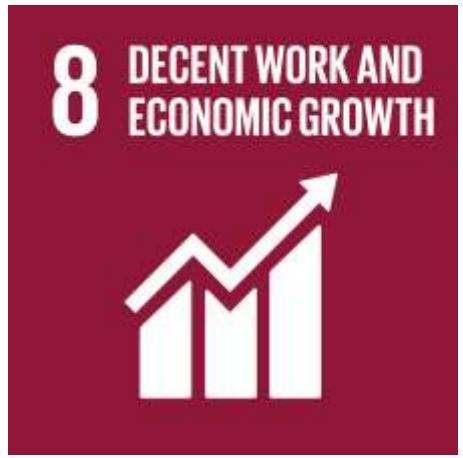
Bin Size 0.10



OUR VALUES

Zero Hunger and Food Security

Good Health and Well-Being



Decent Work and Economic Growth

Responsible Consumption and Production

Life Below Water

Partnership for the Goals

THANK YOU!

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