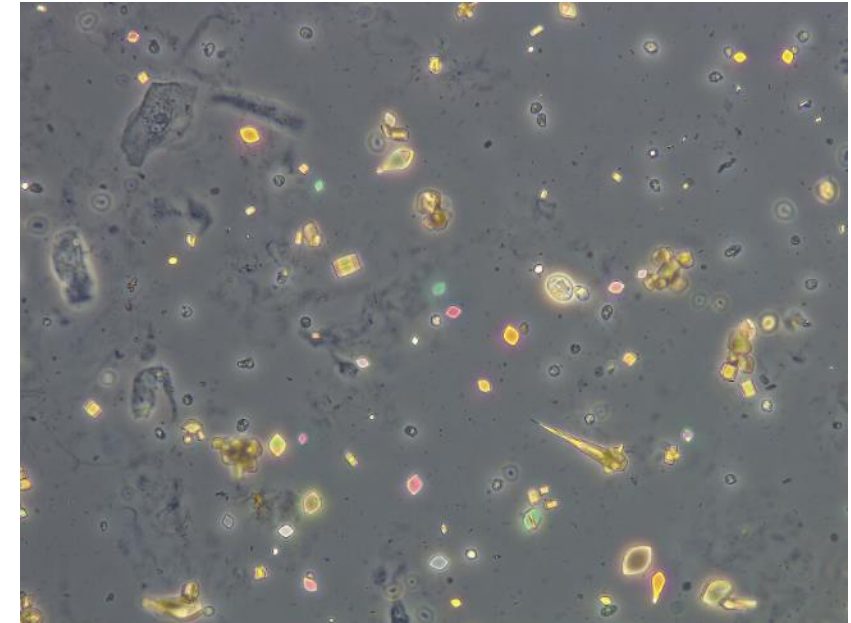


Urinesediment rondzending

*Gebruikersmiddag SKML Algemene Chemie
12-06-2023*

Dr. Ayşe Y. Demir, klinisch chemicus

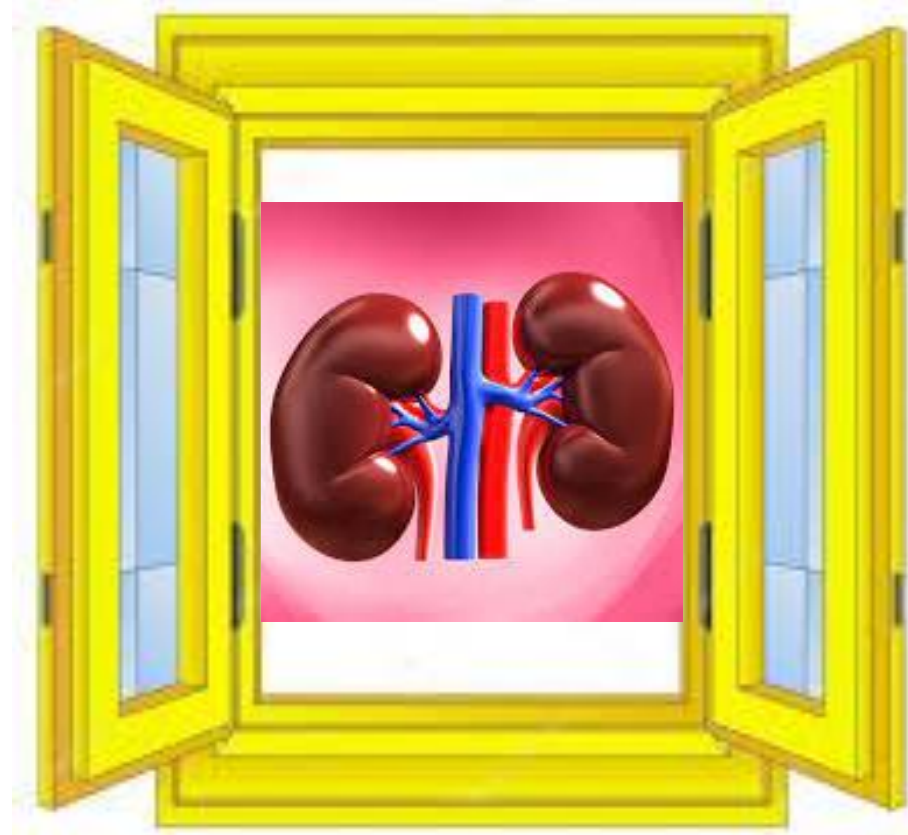
Dr. Lourens Nonkes, klinisch chemicus



Disclosure belangen Demir & Nonkes

Geen (potentiële) belangenverstrengeling	
Voor bijeenkomst mogelijk relevante relaties	Bedrijfsnamen
Sponsoring of onderzoeksgeld	Geen
Honorarium of andere (financiële) vergoeding	Geen
Aandeelhouder	Geen
Andere relatie, namelijk ...	Geen

U-sediment: Liquid Biopsy



Urinesediment (U-sediment)



Dr. Thomas Addis (1881-1949)

When the patient dies the kidneys may go to the pathologist, but while he lives the urine is ours.

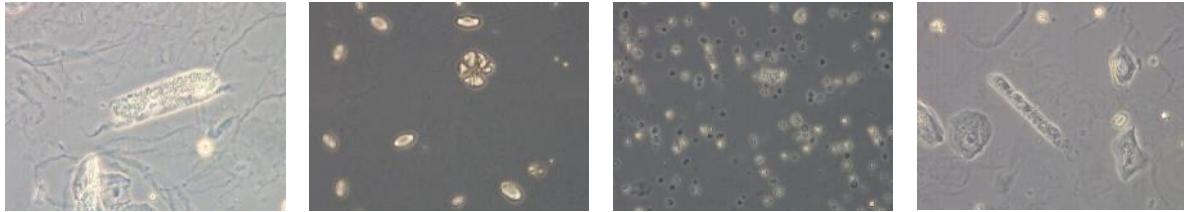
It can provide us day by day, month by month, and year by year with a serial story of the major events within the kidney.

EQA U-sediment, 2020 - 2021

	 <small>Stichting Kwaliteitsbewaking Medische Laboratoriumdiagnostiek</small>	 INSTAND	LABQUALITY	 <small>European Society for External Quality Assessment</small>
Digitale Beelden	geen	4x/jaar	4x/jaar	
Urine monster	geen	geen	4x/jaar	4x/jaar

SKML EQA U-sediment

Rondzending digitale beelden (kwalitatief)



Rondzending U-monster (kwantitatief)



Behoeftte aan uniformiteit

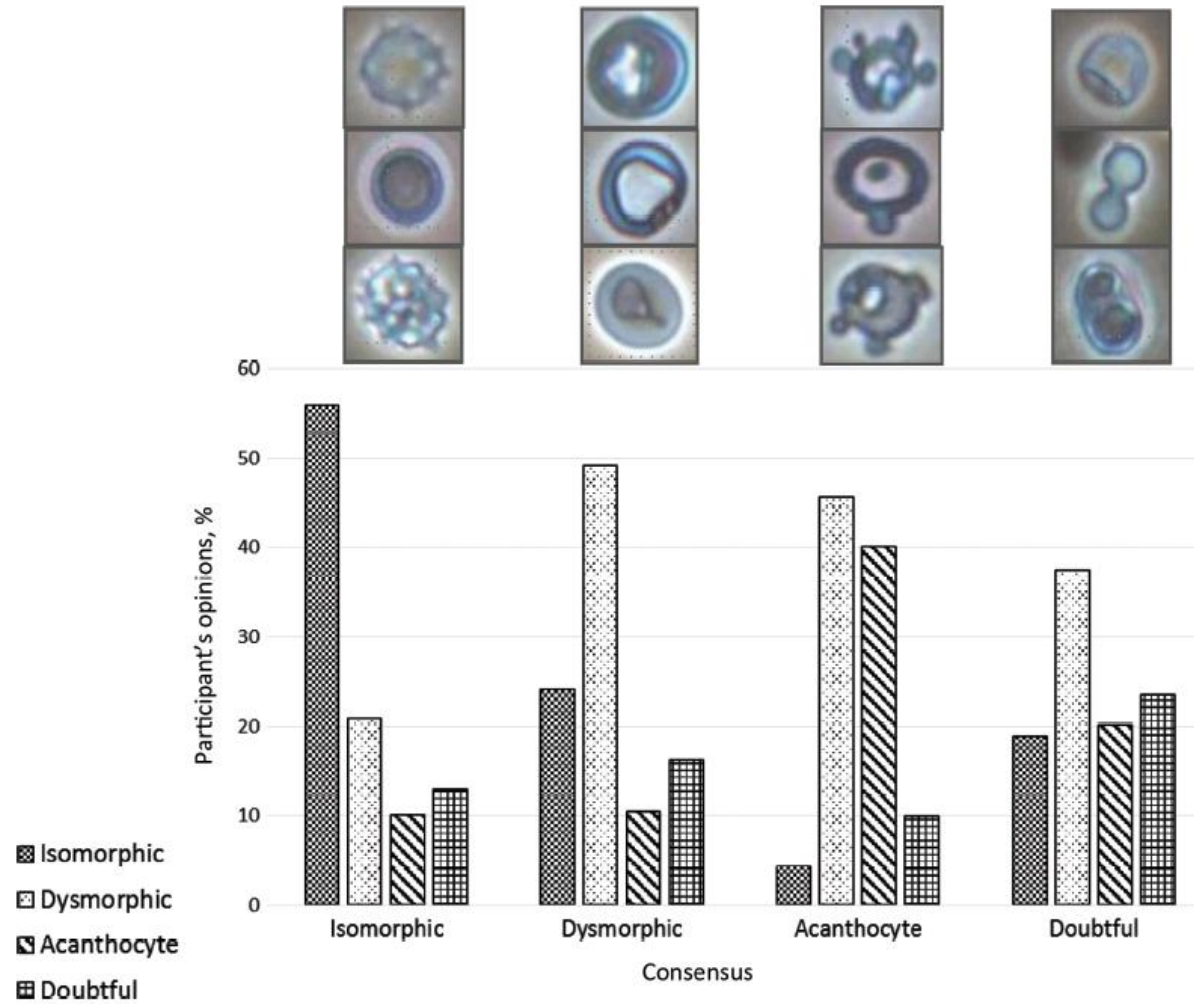


Figure 1: Conditional distributions generated by keeping the consensus constant and capturing variation in opinions.

Rondzending digitale beelden (kwalitatief)

Database 51 categorieën:

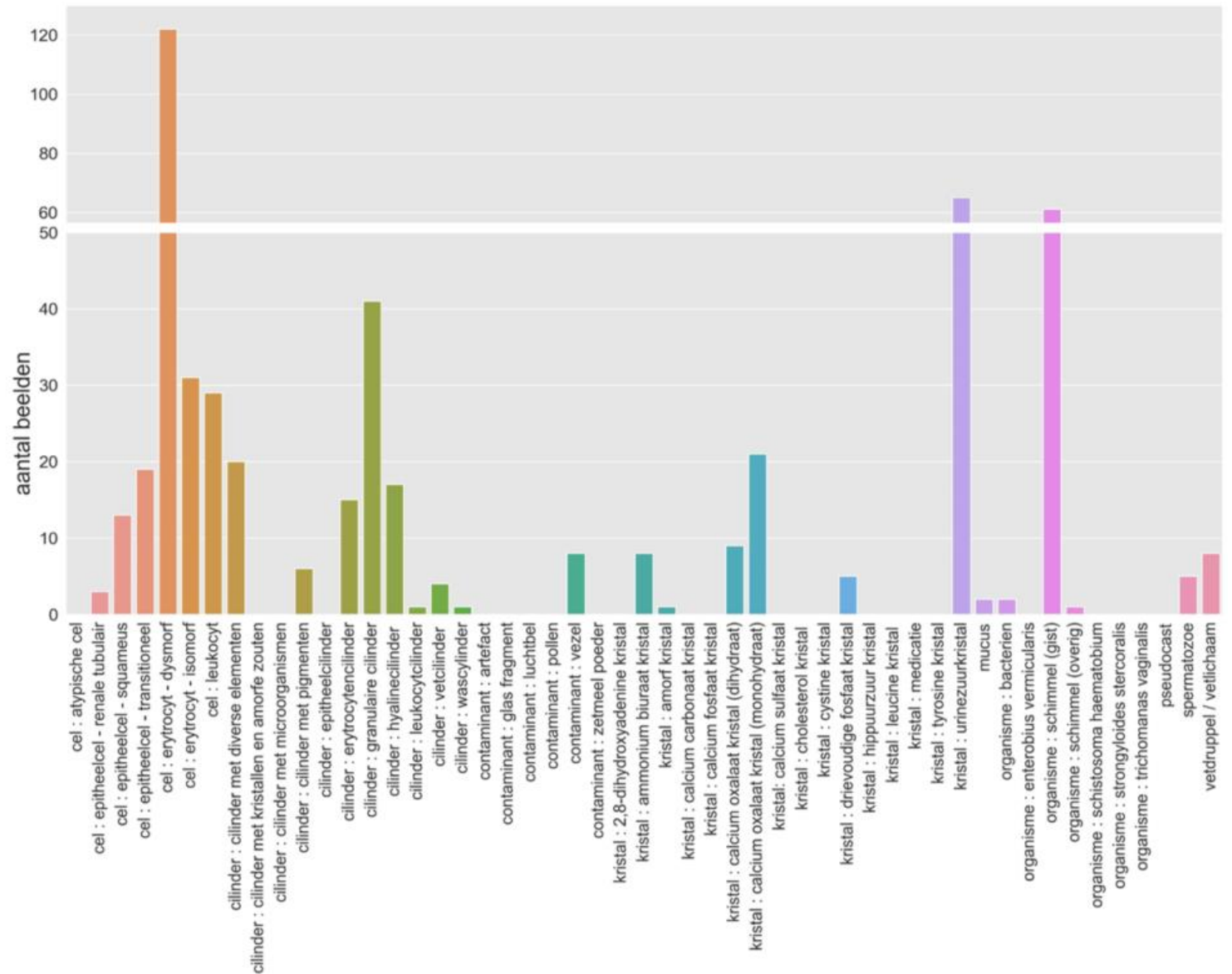
>800 unieke beelden

>1500 erythrocyten beelden

4x jaar

16 beelden

69 -> 74 deelnemers



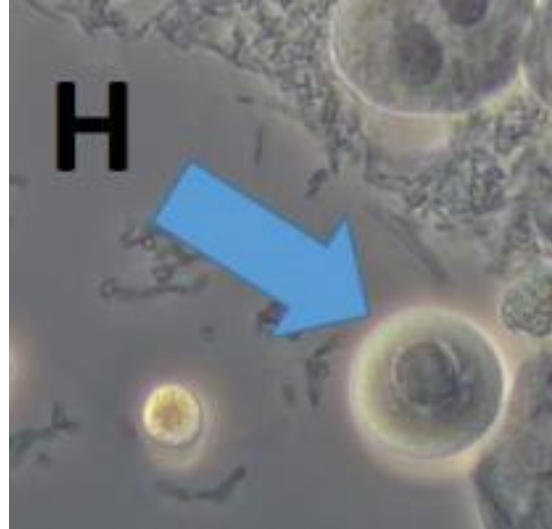
Algemene opmerkingen

- Cellen: Epitheelcel – Squameus, Leukocyt
- Contaminatie: Vezel, Mucus, Luchtbel
- Kristallen: Urinezuur, Calciumoxalaat
- Cilinders: Hyaliene, Korrel
- Micro-organismen: Gist, Bacteriën, Schimmel

Cellen



RZ-2022-1:
Transitionele epitheel 43%
Renale tubulaire epitheel 51%



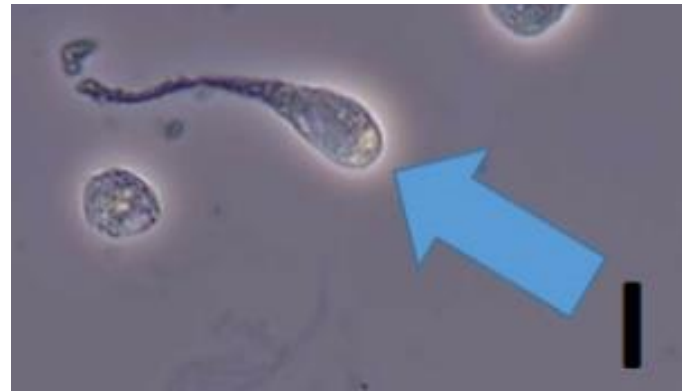
RZ-2022-3:
Transitionele epitheel 50%
Renale tubulaire epitheel 50%



RZ-2023-1:
Renale tubulaire epitheel 48%
Leukocyten 26%
Transitionele epitheel 17%

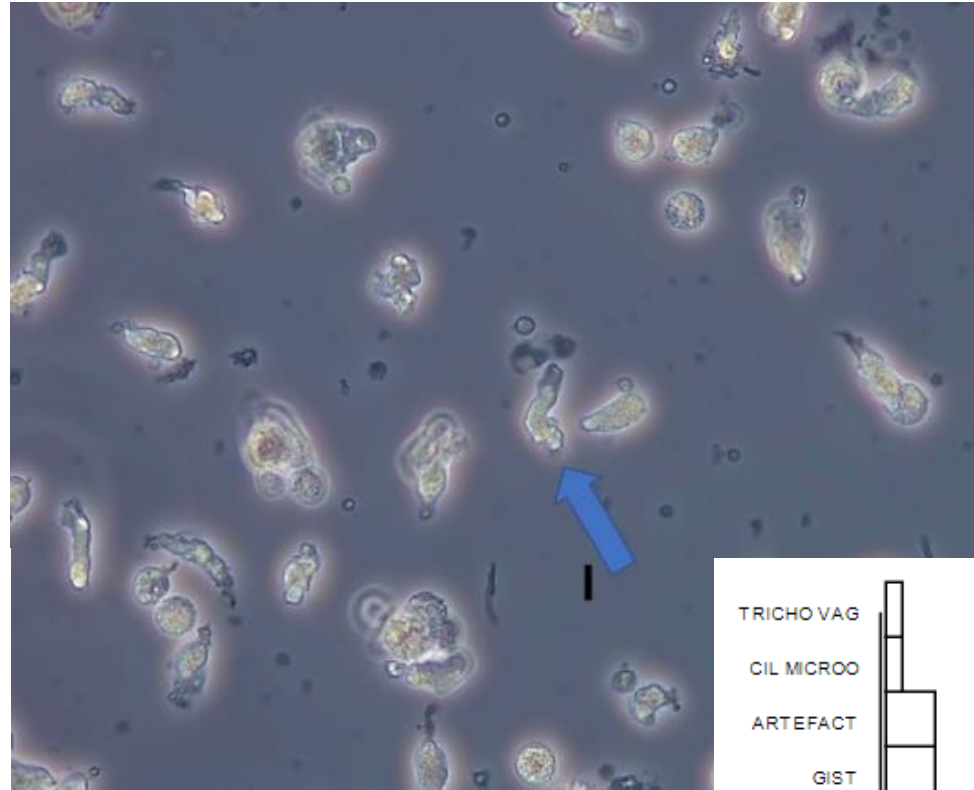
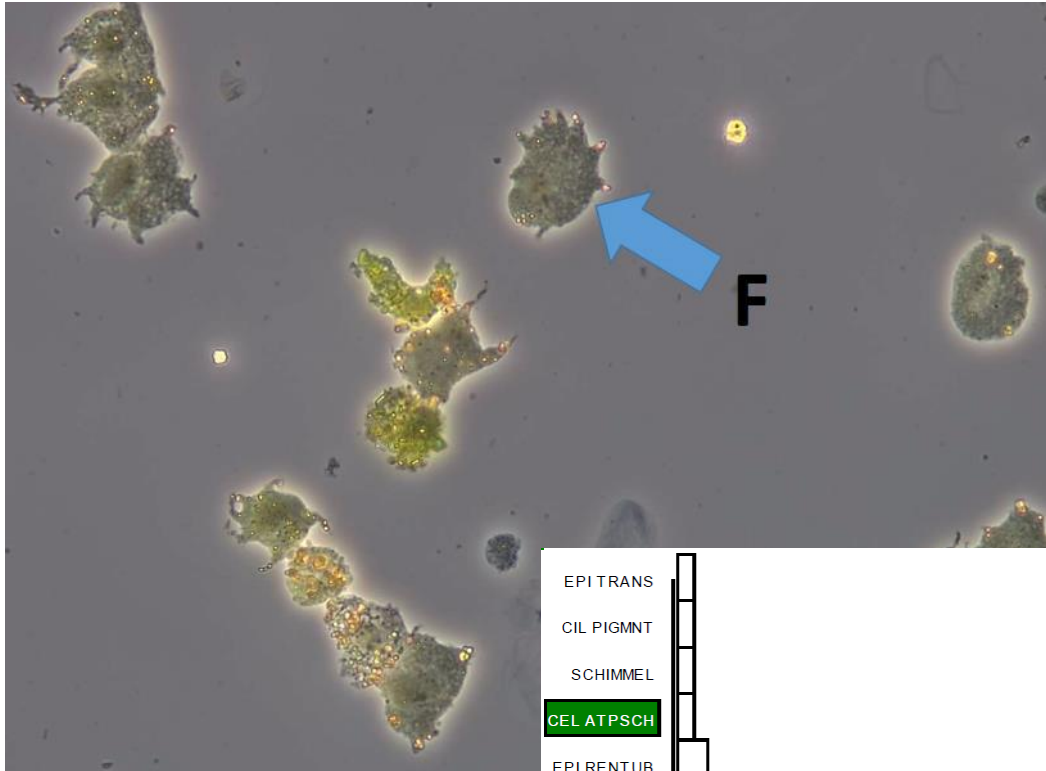


RZ-2022-4:
Renale tubulaire epitheel 40%
Epitheel cilinder 26%
Transitionele epitheel 23%

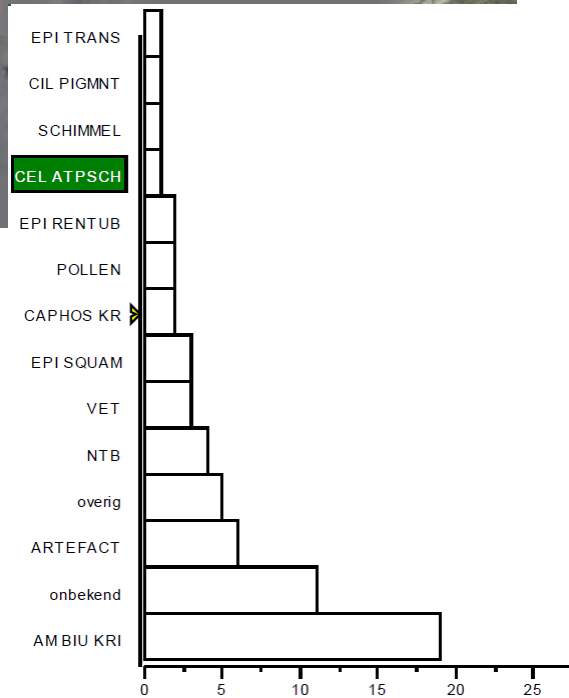


RZ-2022-2:
Transitionele epitheel 55%
Renale tubulaire epitheel 14%

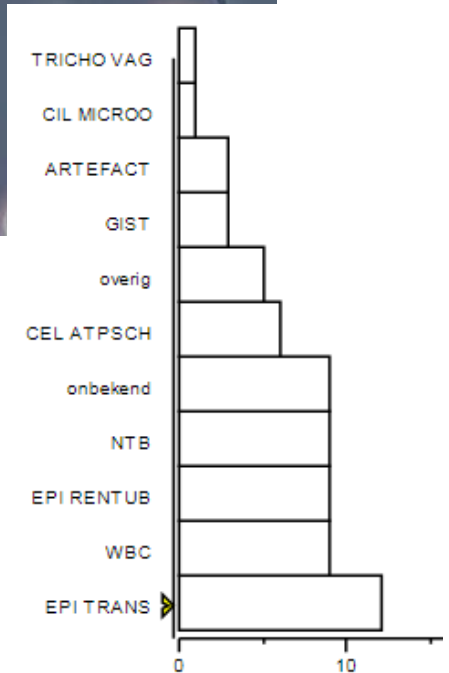
Cellen



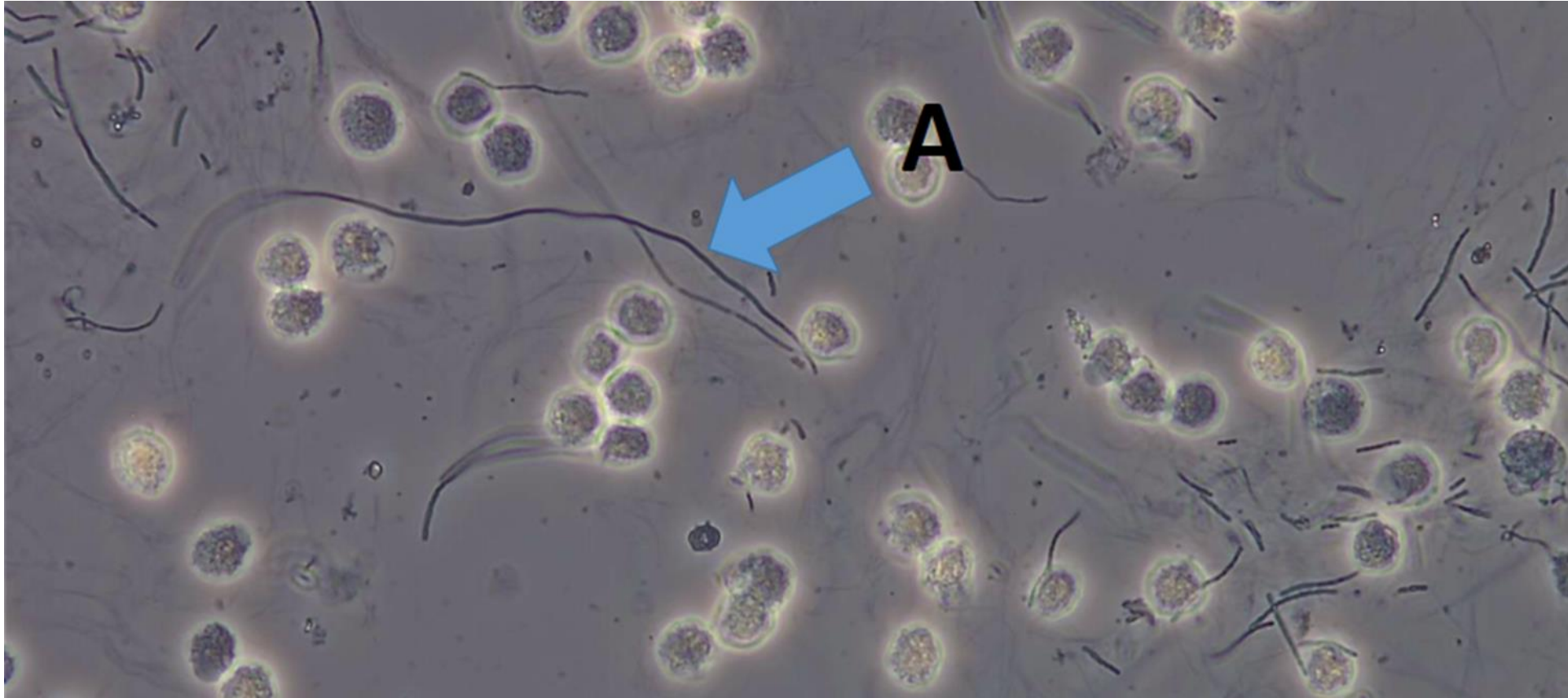
RZ-2022-4



RZ-2023-1



Micro-organismen



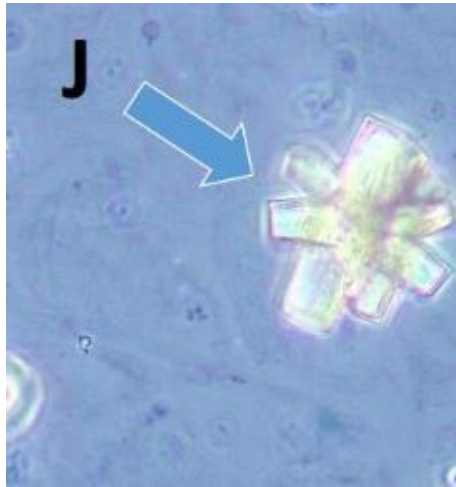
RZ-2022-4:

Bacteriën 44%

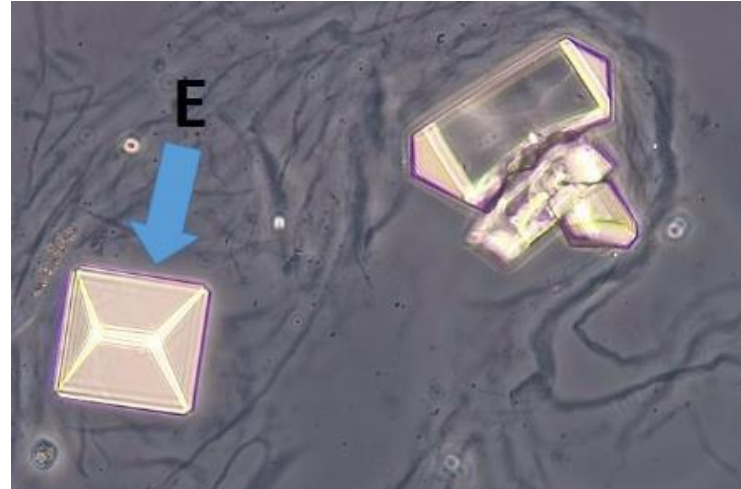
Schimmel 32%

Mucus 13%

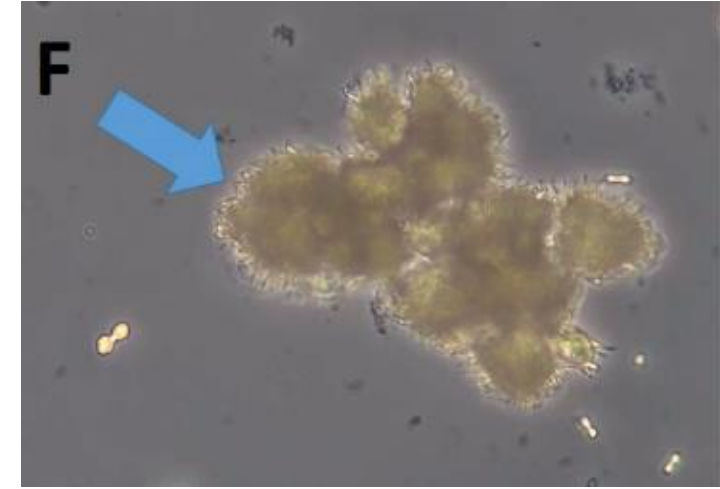
Kristallen



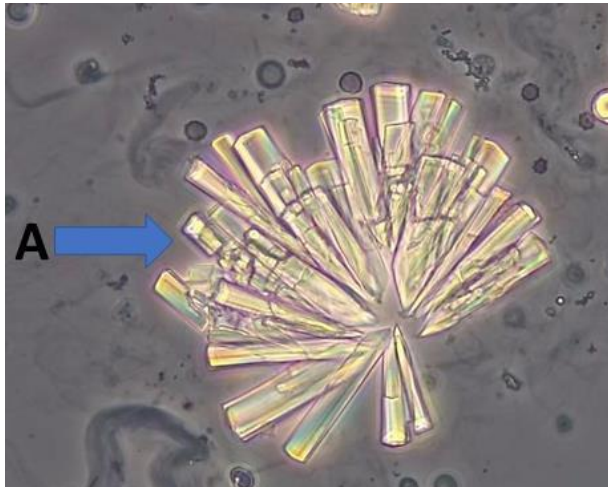
RZ-2022-1:
Urinezuur 41%
Calciumfosfaat 48%



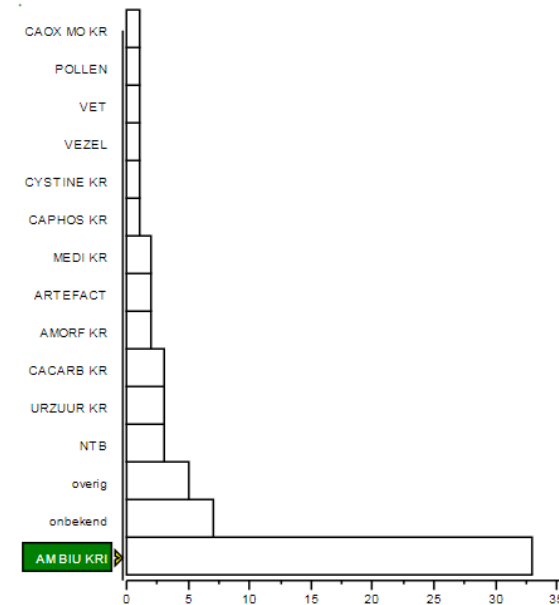
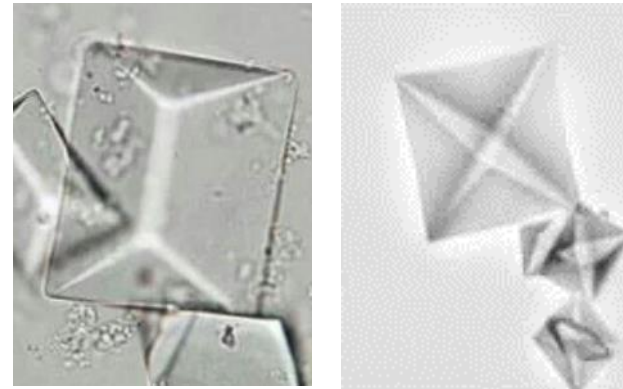
RZ-2022-2:
Triplefosfaat 64%
Calciumoxalaat 31%



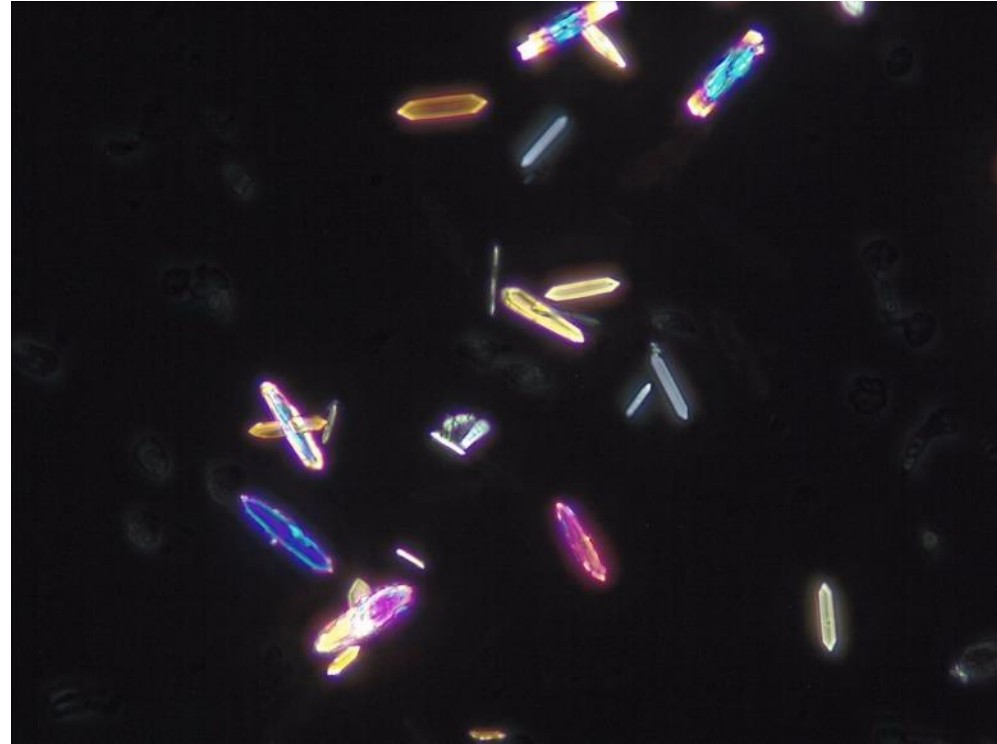
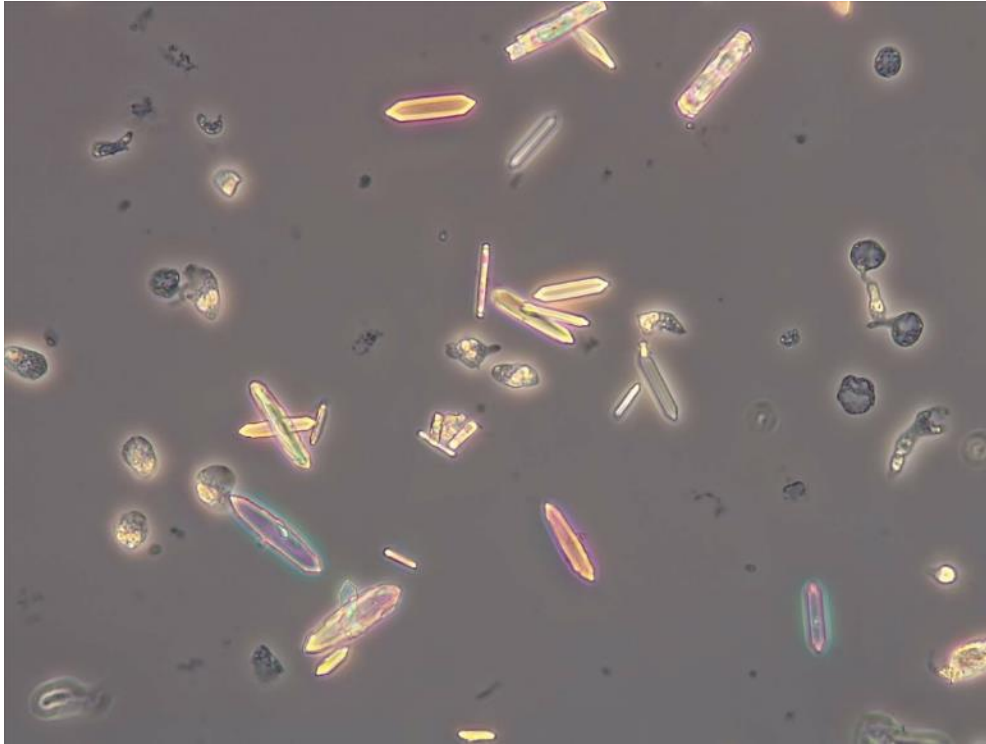
RZ-2022-3:
Ammoniumbiuraat 50%



RZ-2023-1:
Calciumfosfaat 85%

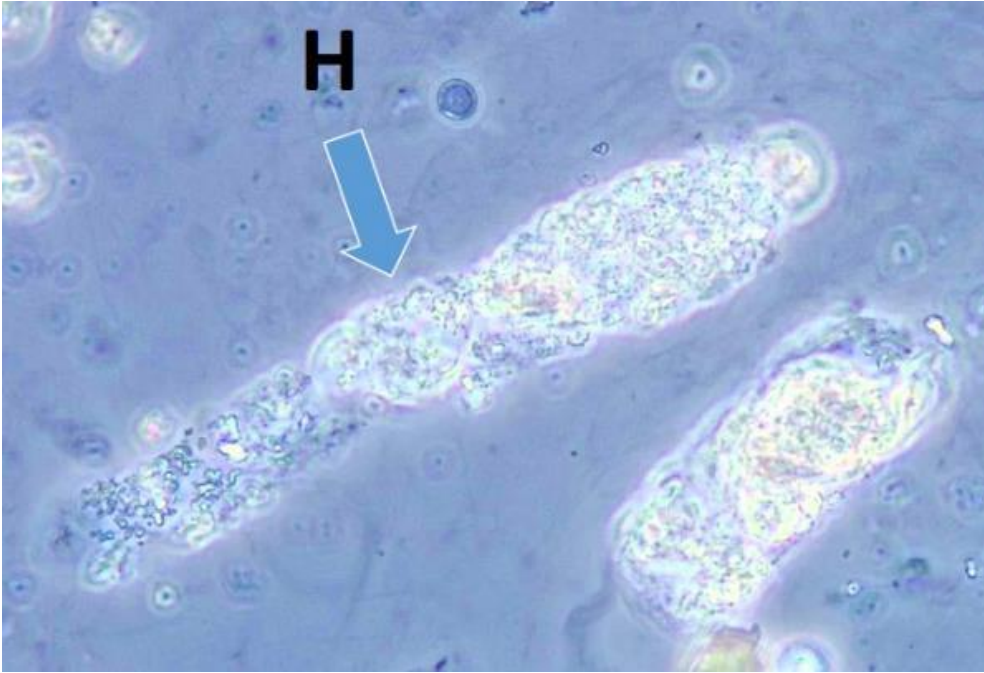


Calciumoxalaatmonohydraatkristallen

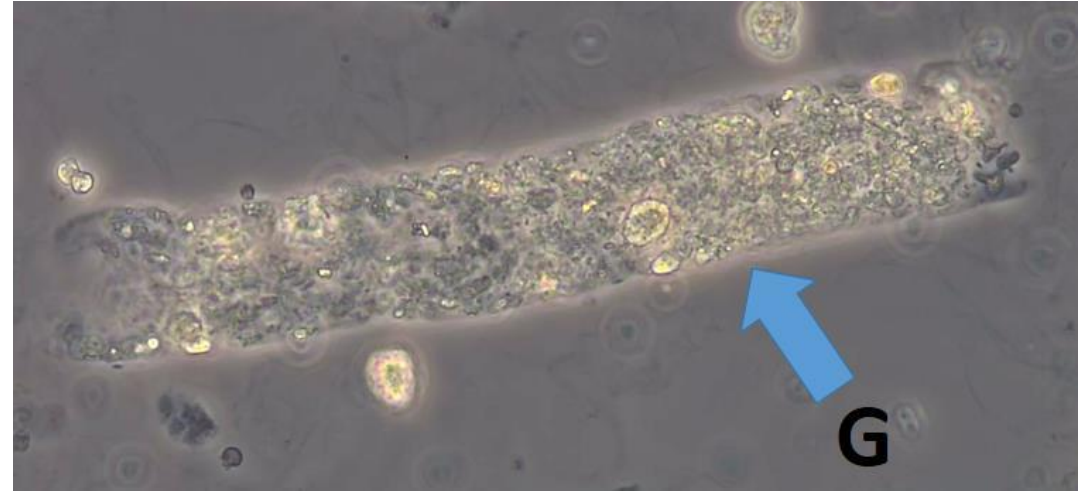


Bij ethyleenglycolintoxicatie kunnen calciumoxalaatmonohydraatkristallen voorkomen

Cilinders

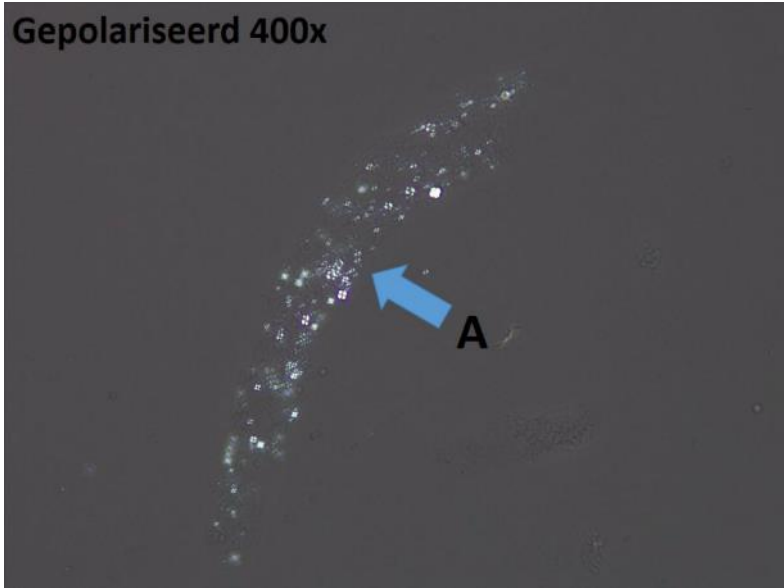
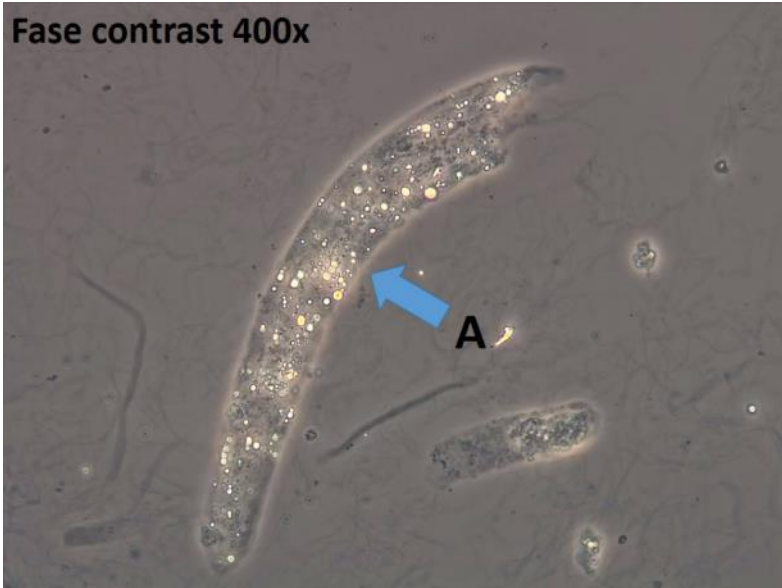


RZ-2022-1:
Korrelcilinders 56%
Cilinders met diverse partikels 28%

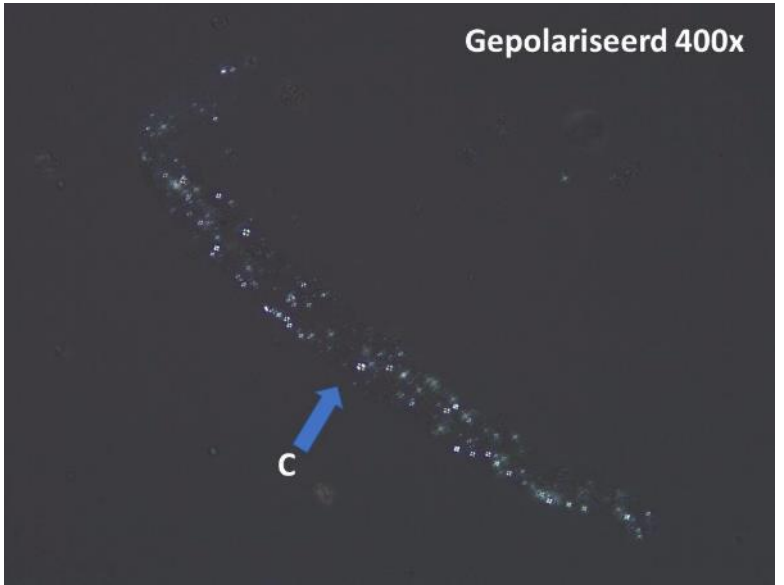


RZ-2022-4:
Cilinders met diverse partikels 42%
Leukocytencilinders 25%
Korrelcilinders 10%

Cilinders

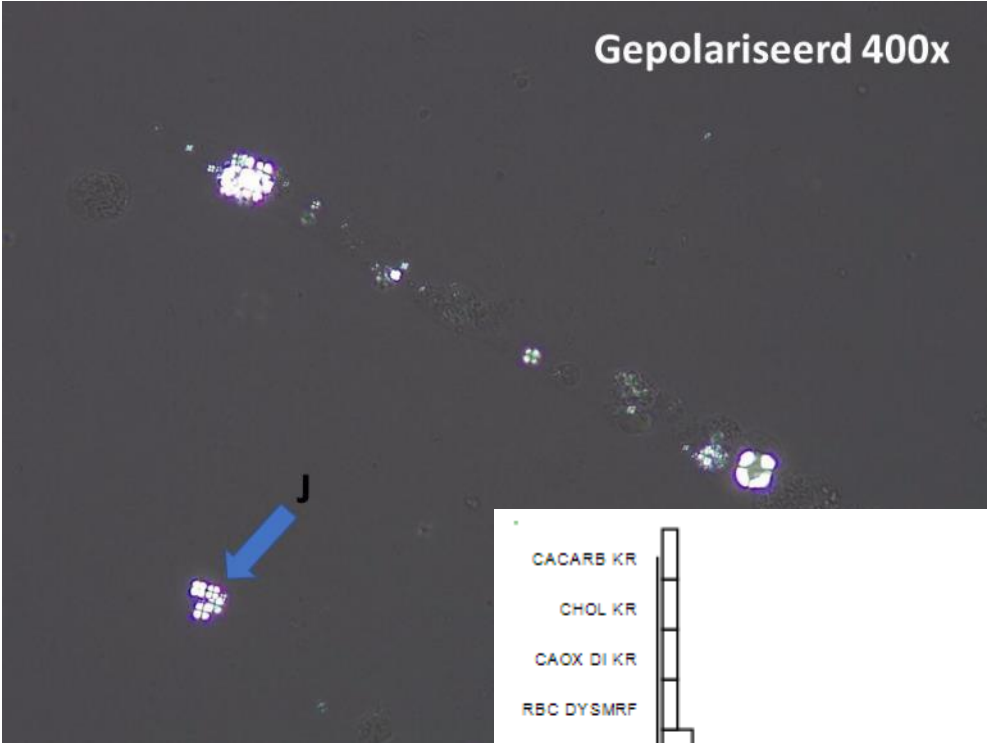
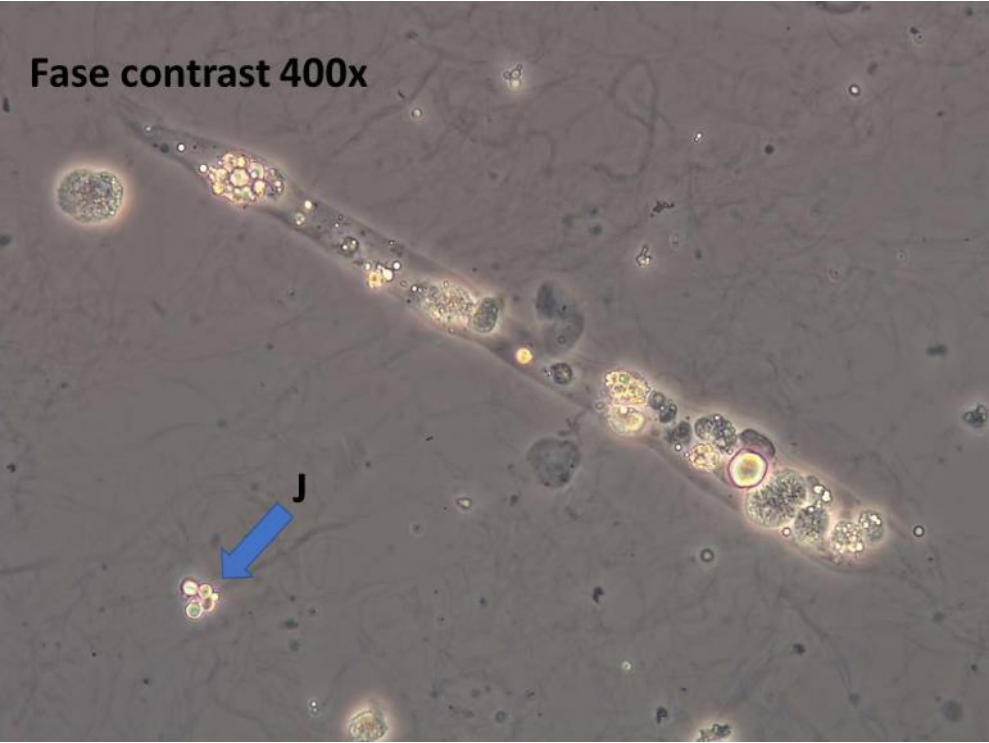


RZ-2022-2
Vetcilinder 45%
Erythrocytencilinder 23%
Korrelcilinder 19%

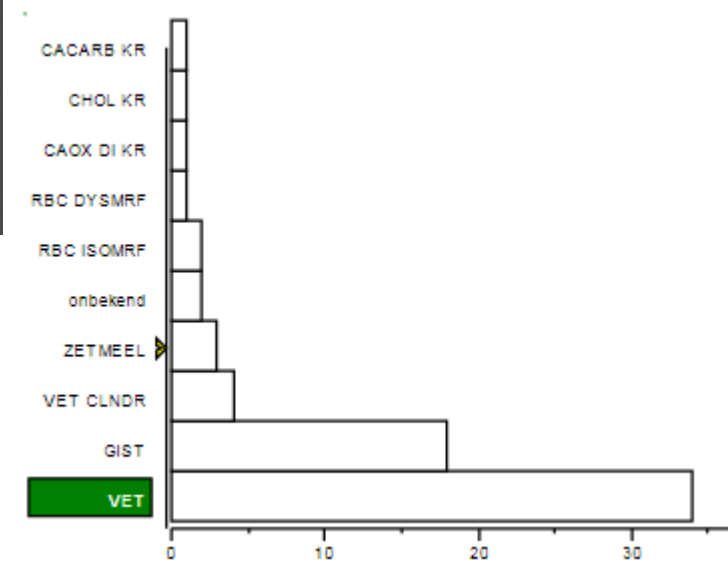


RZ-2023-1
Cilinders met diverse partikels 6%
Vetcilinder 67%
Korrelcilinder 14%
Hyaliencilinder 7%

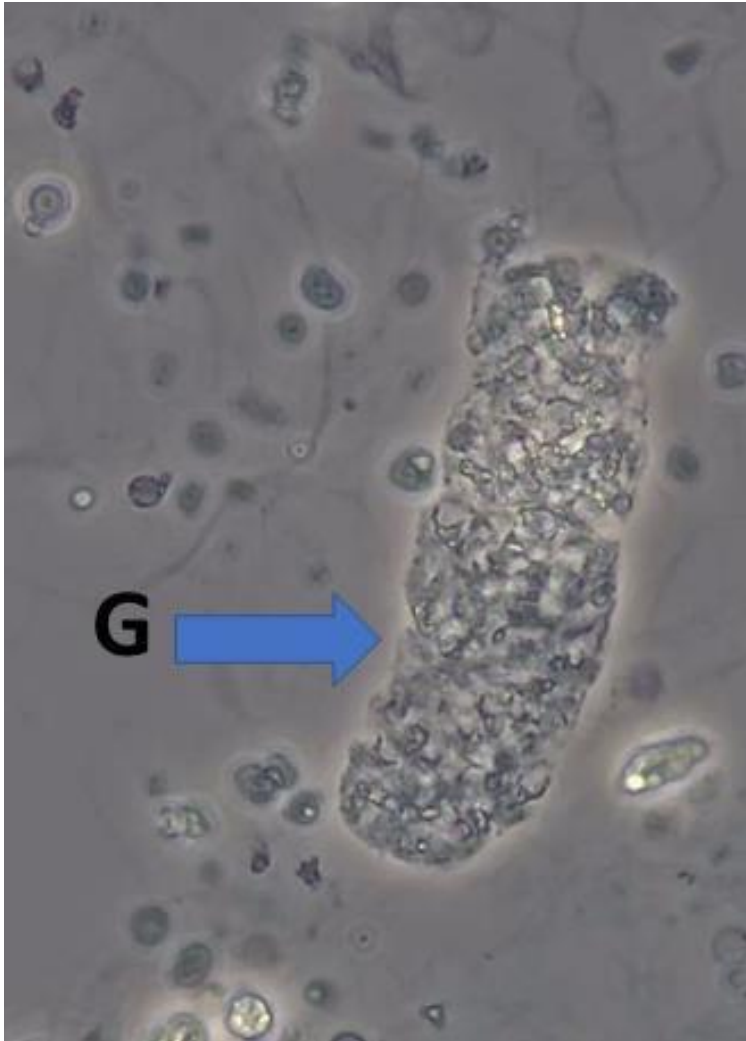
Vet



RZ-2023-1



Cilinders



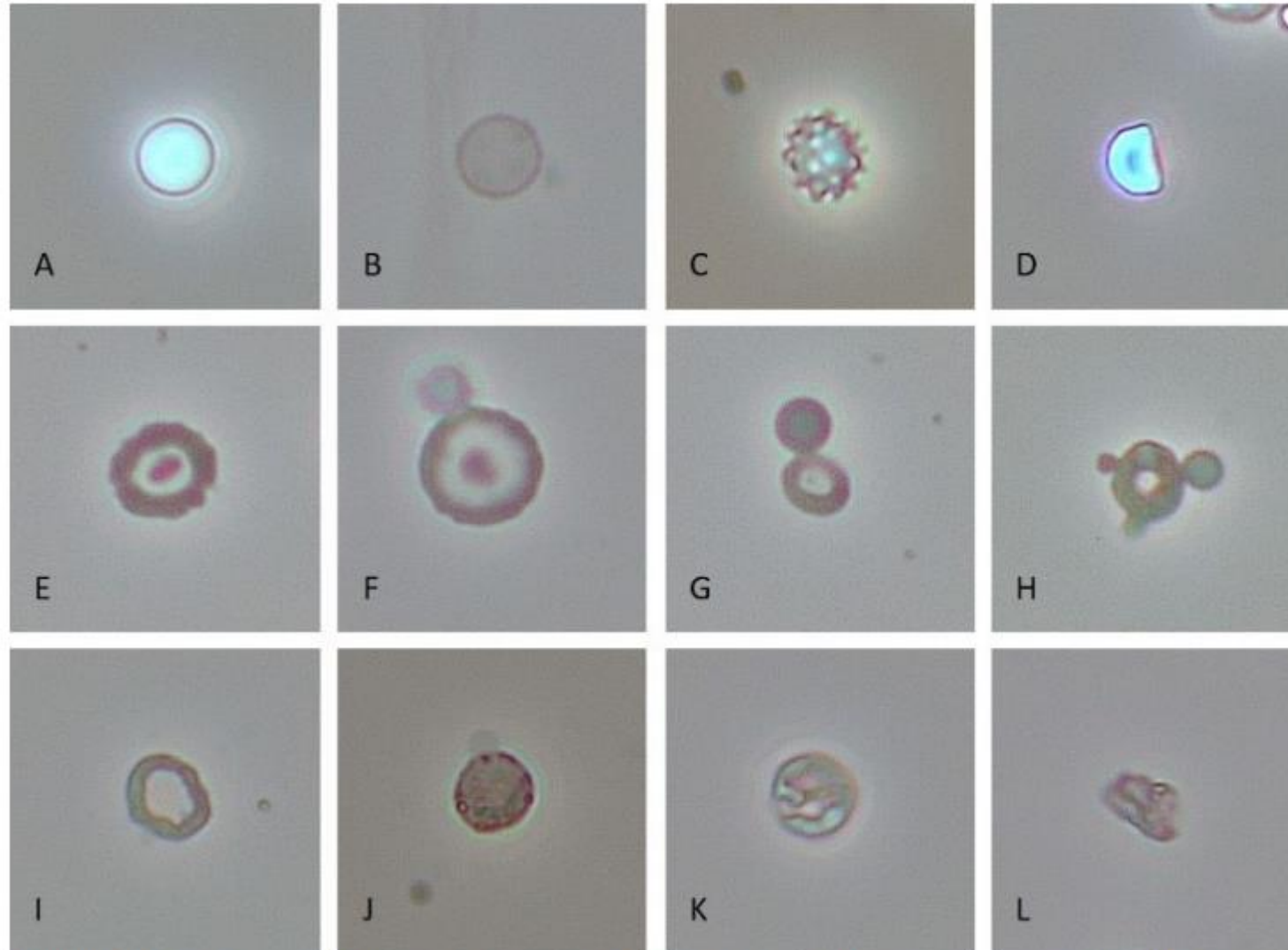
RZ-2023-1

Erythrocytencilinder 56%

Korrelcilinder 23%

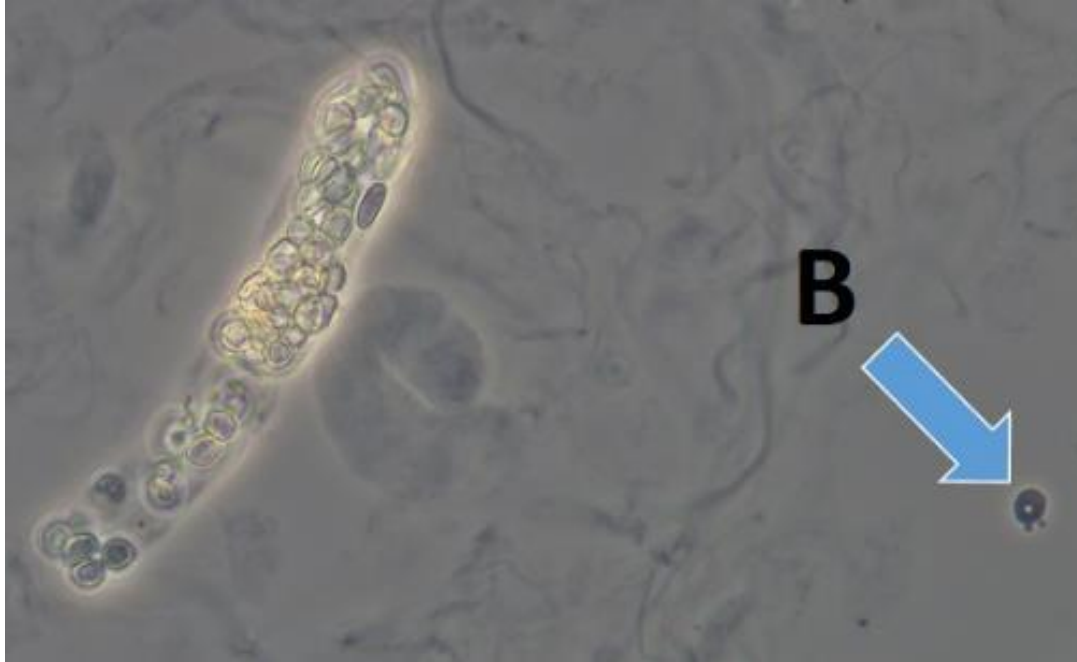
Cilinders met diverse partikels 12%

FMS-richtlijn: Eenduidige en accurate laboratoriumdiagnostiek bij hematurie, 2020 (NVKC)



Figuur 1. Fasecontrastbeelden van isomorfe (A-D) en dysmorfe (E-L) erythrocyten in urine. Onder acanthocyten vallen erythrocyten met kenmerkende endoconi of exoconi (E-H).

Cellen

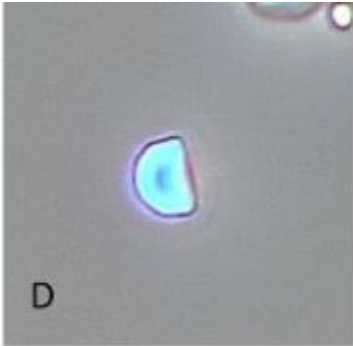
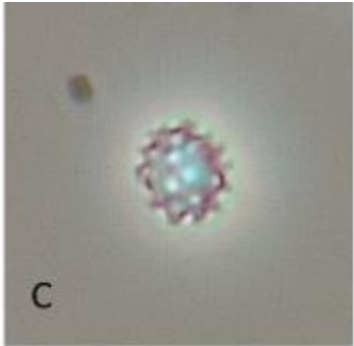
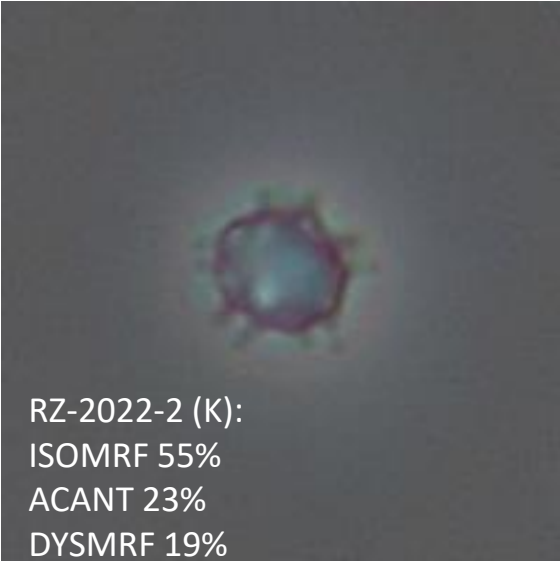


RZ-2022-1:
Acanthocyten 36%
Dysmorfe erythrocyten 48%

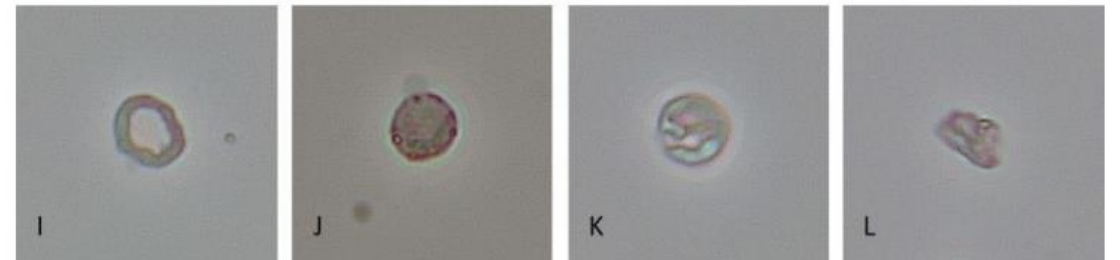
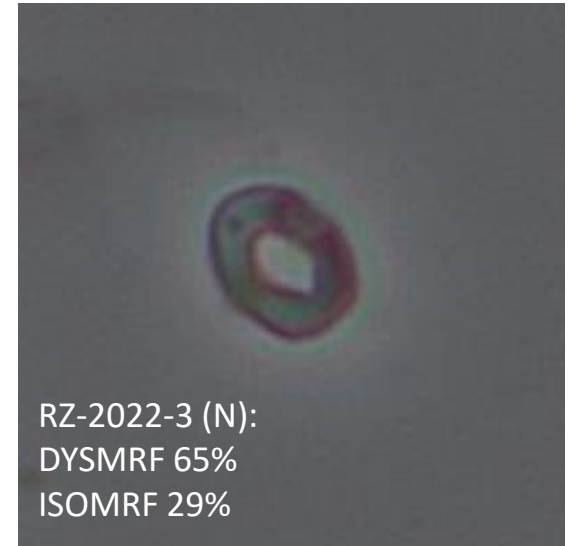
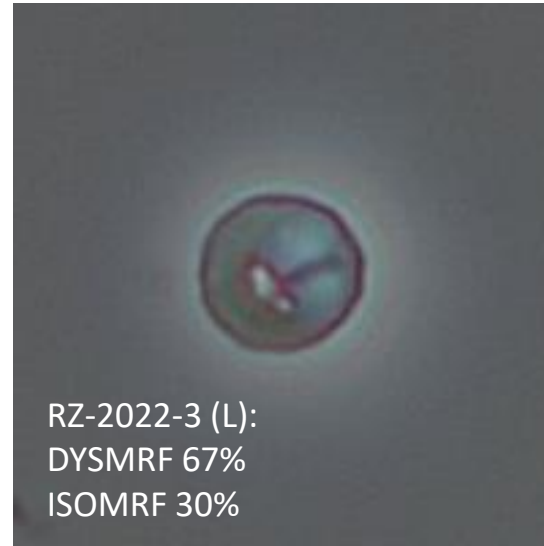
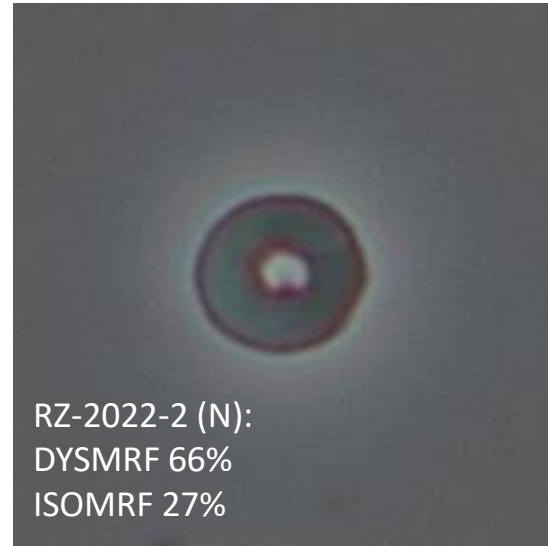
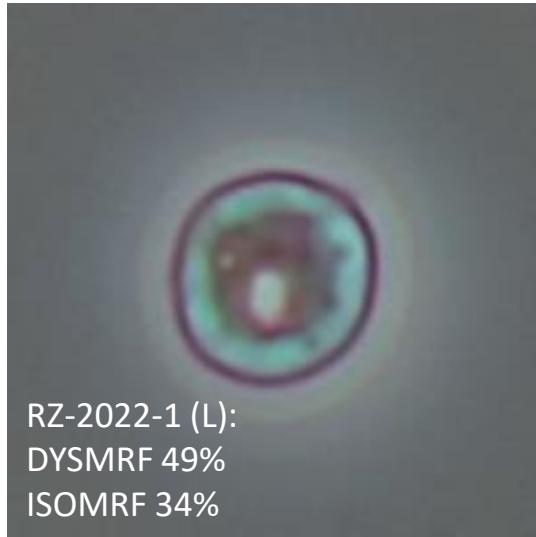


RZ-2022-2:
Isomorfe erythrocyten 48%
Leukocyten 41%

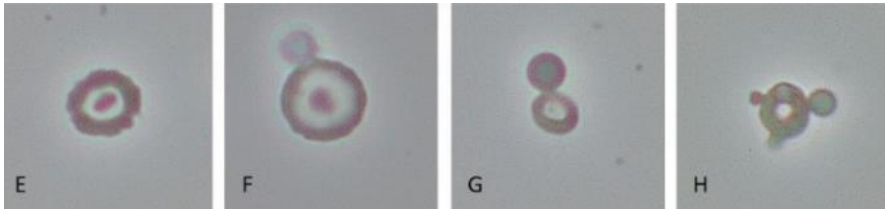
Erythrocyten morfologie



Erythrocyten morfologie



Cellen



Puntjes op de 'i'

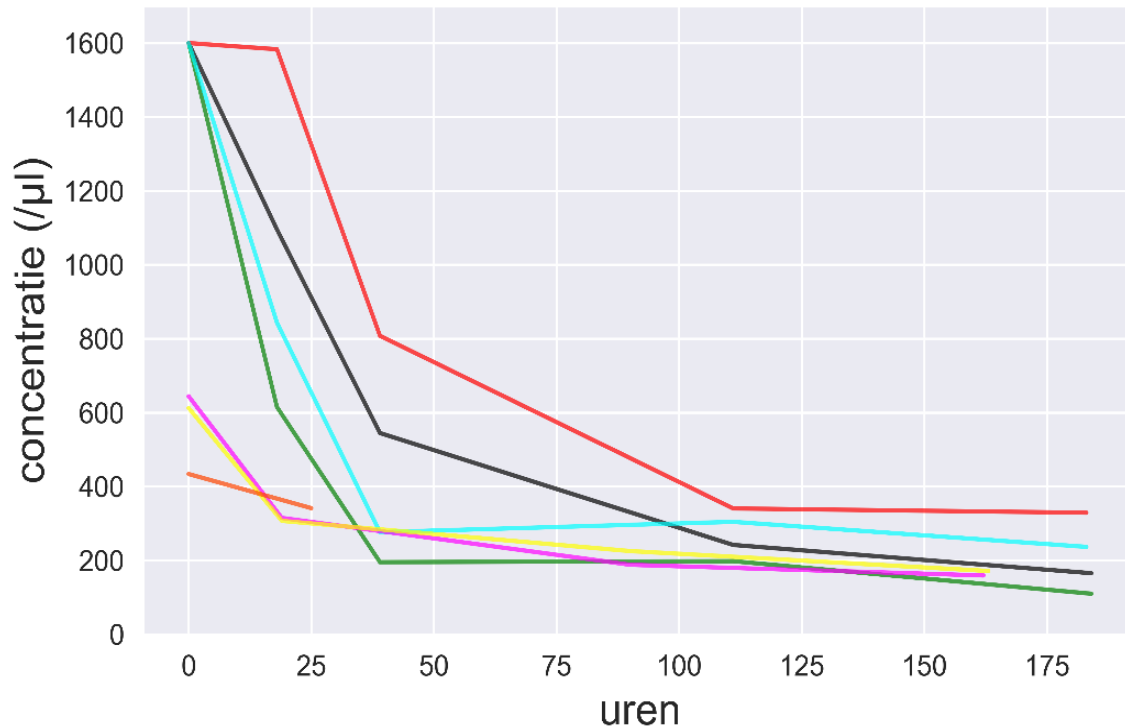
- Vanaf 2023: commentaar/bespreking van monsters
- Vergroten expert-panel
- Enquête deelnemers: het aantal van de monsters?

Rondzending U-monster (kwantitatief)

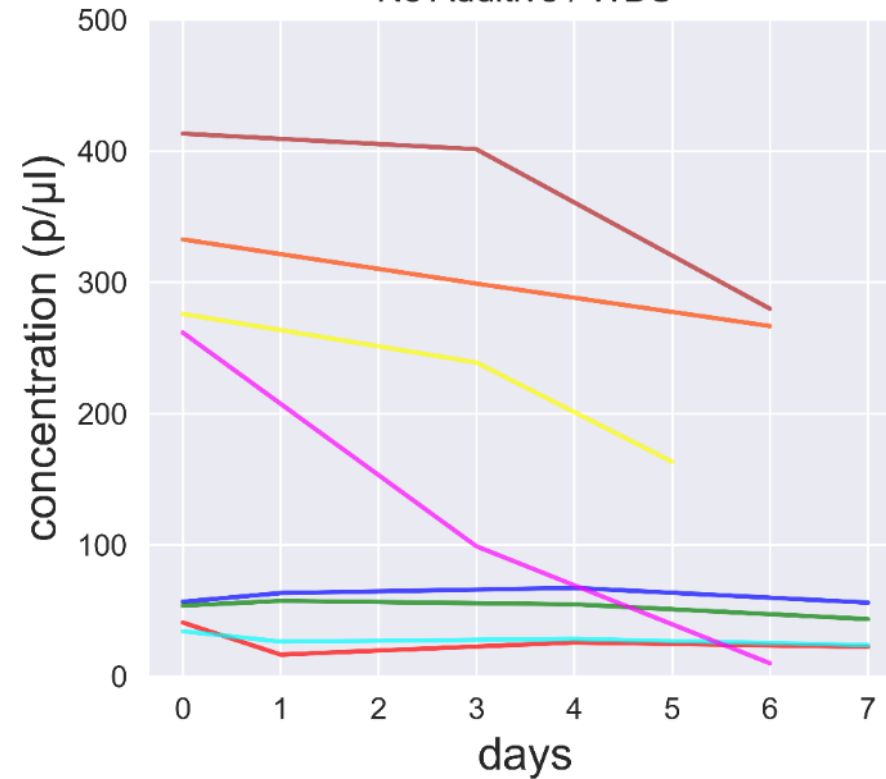
Wat is de geschikte preservatiemiddel?



RBC / No Additive

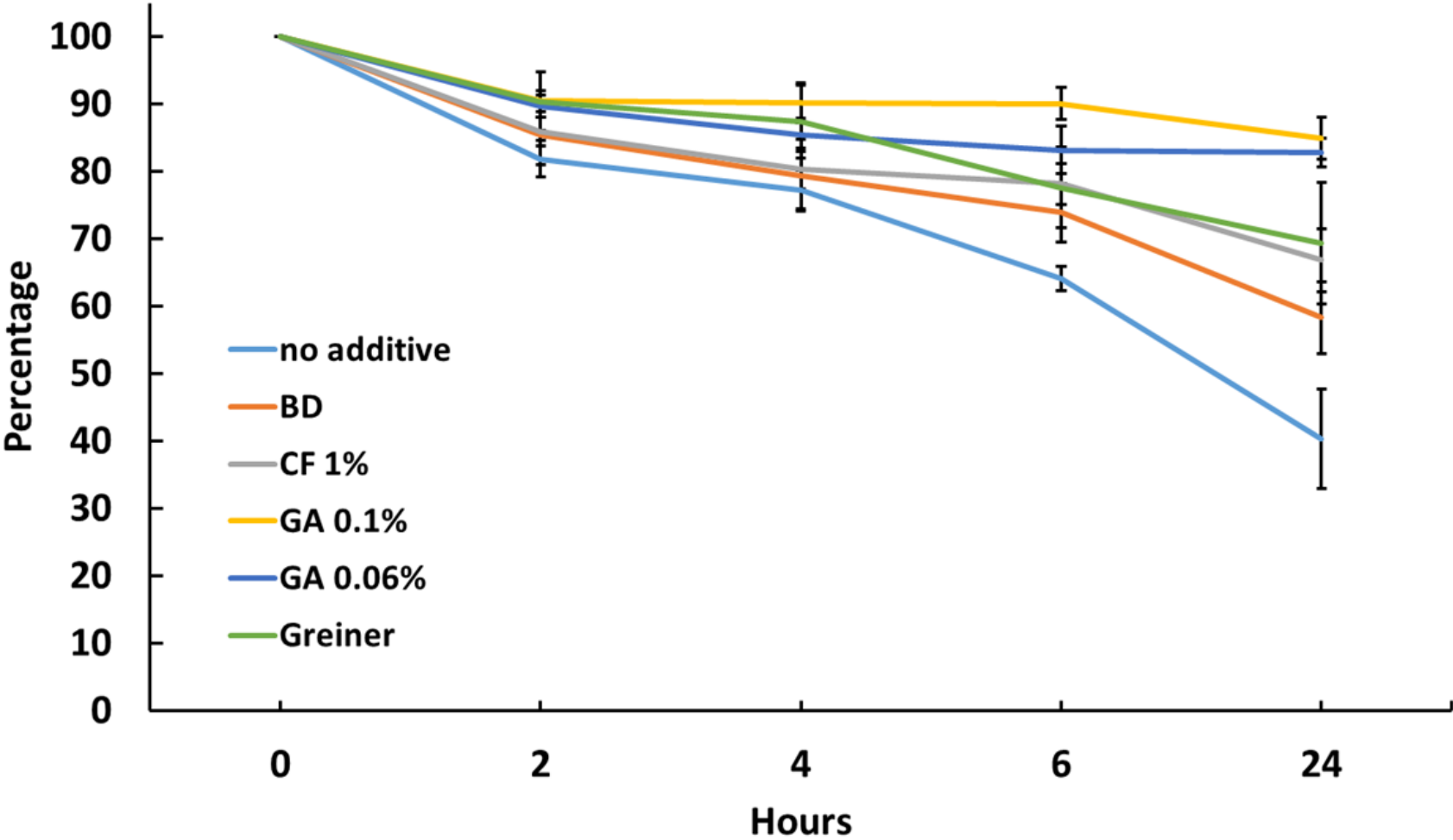
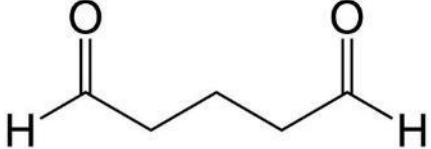


No Additive / WBC

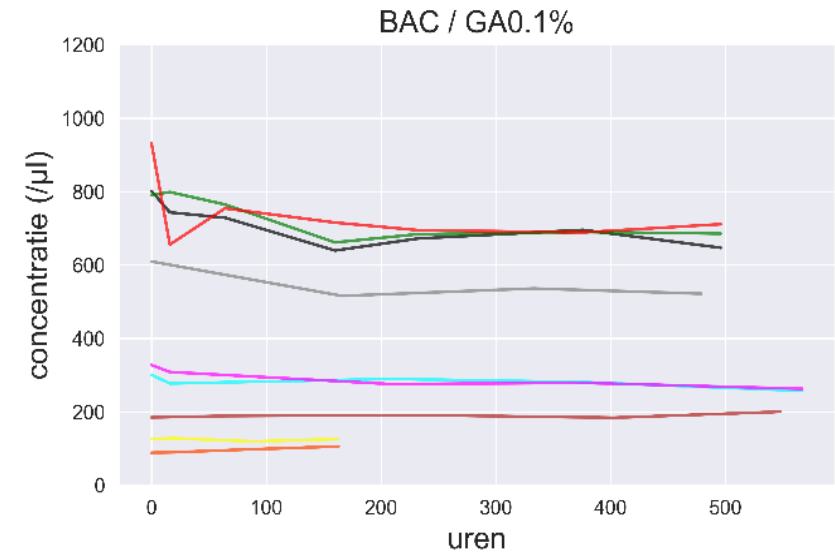
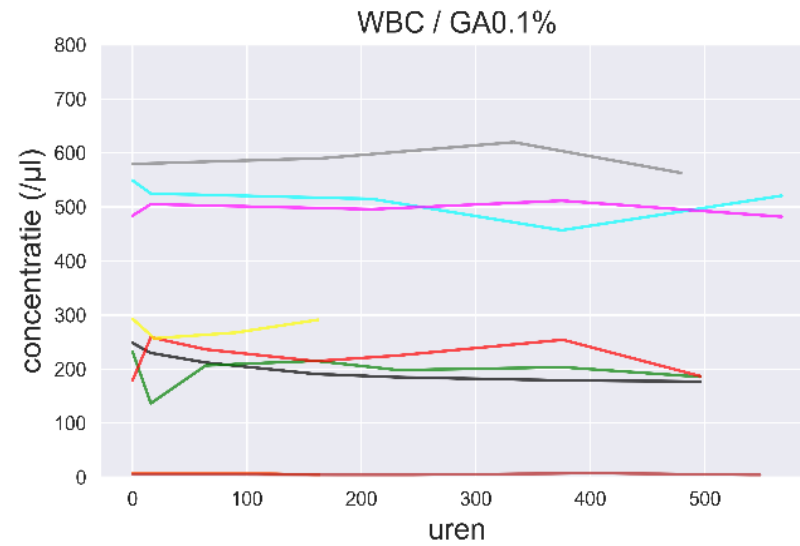
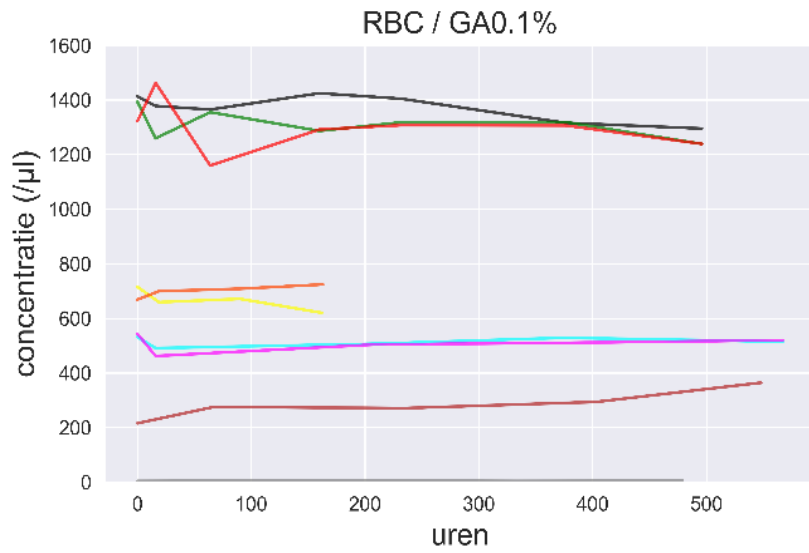


Alternatieve preservatiemiddelen

Glutaaraldehyde

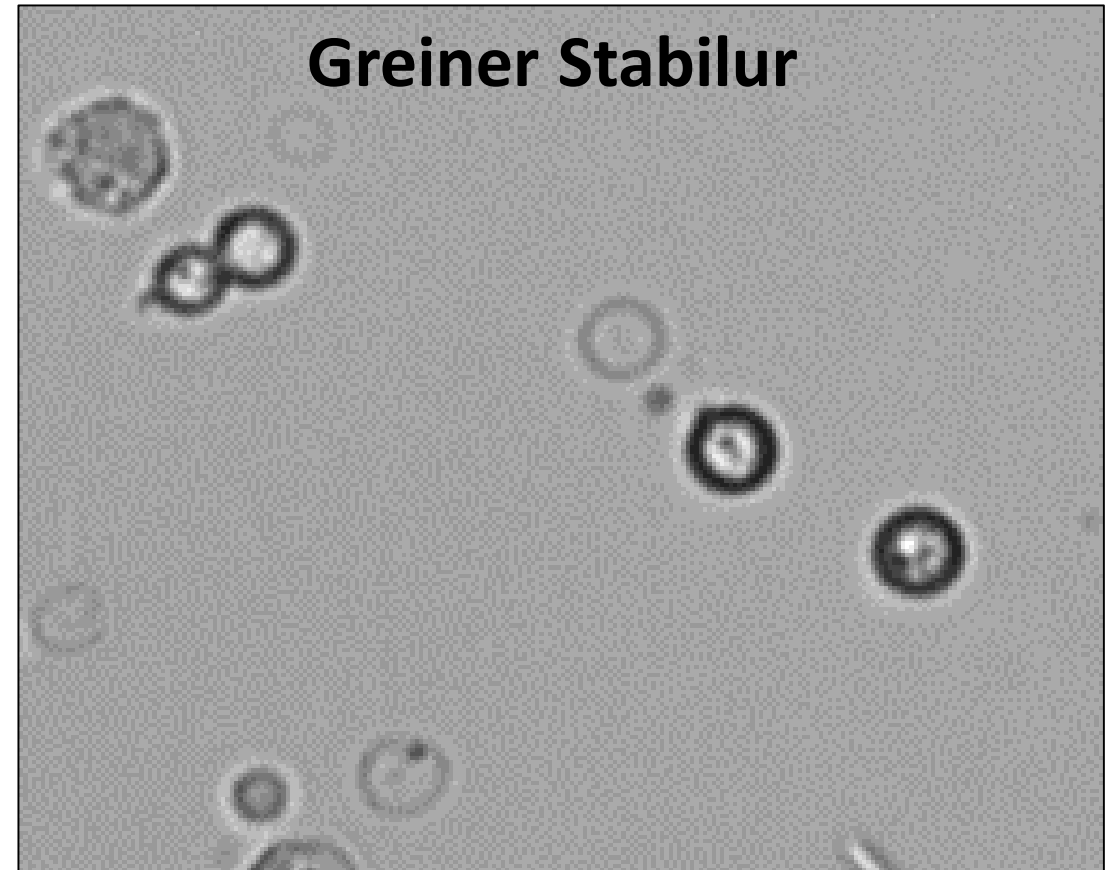
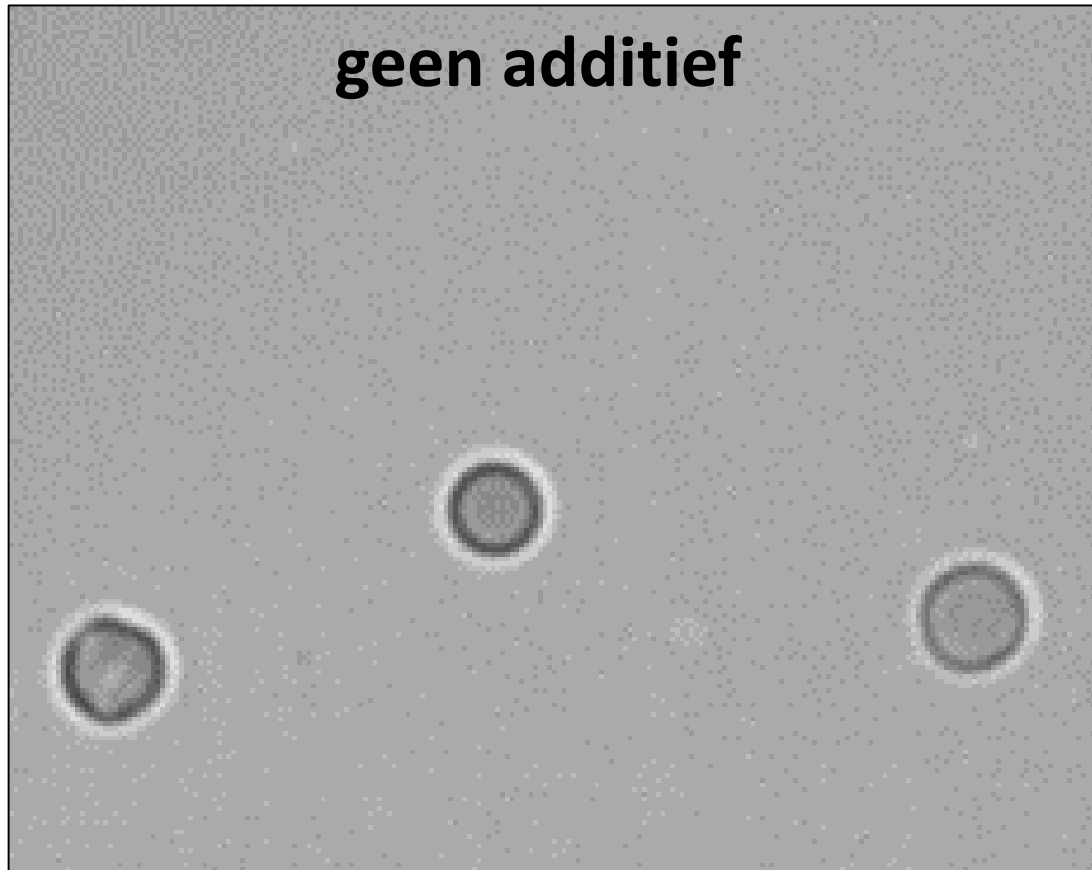


Stabiliteit gedurende 3 weken

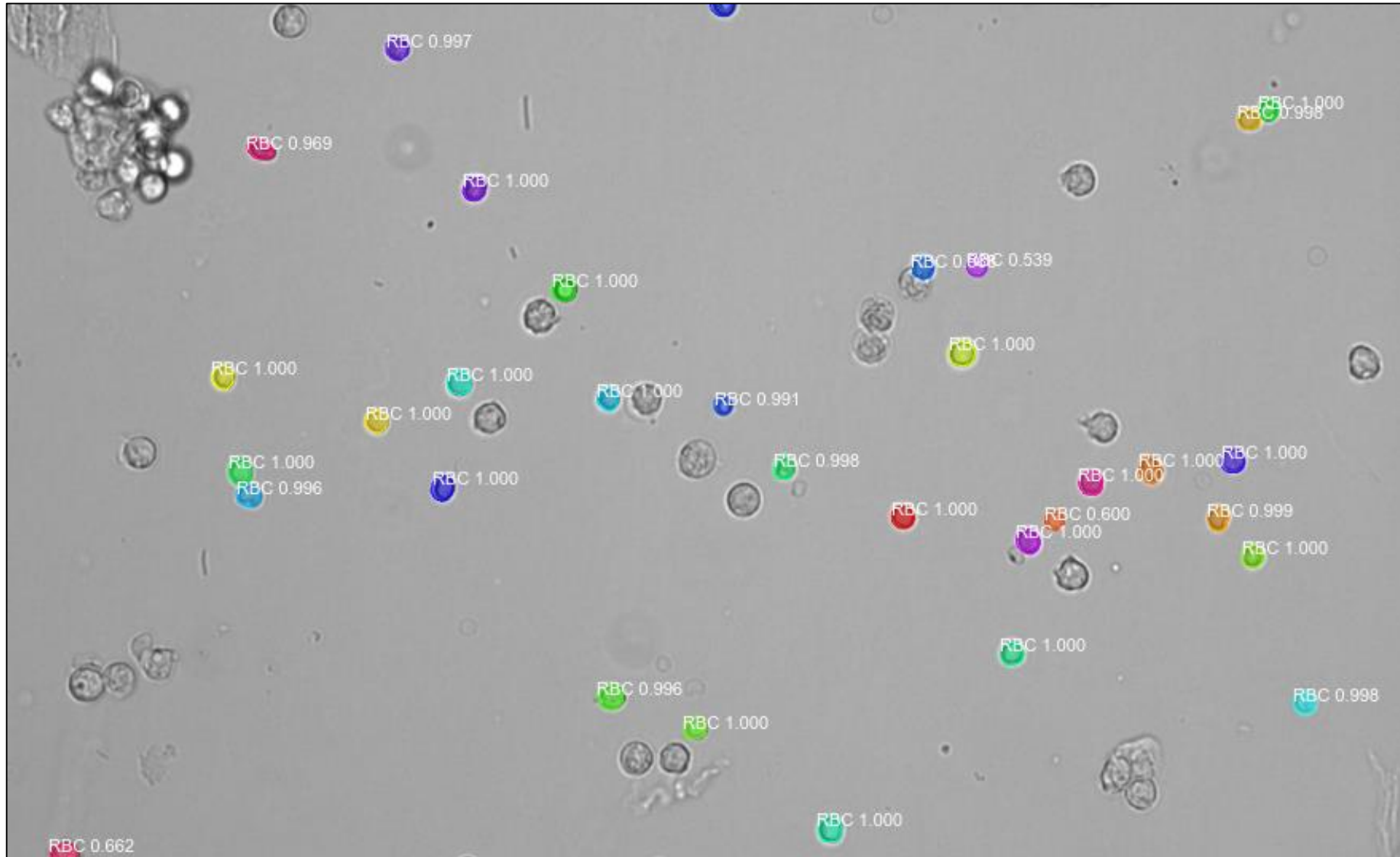


Stabiel... ook geen effecten op morfologie?

Effecten van preservatiemiddelen op erythrocyten morfologie

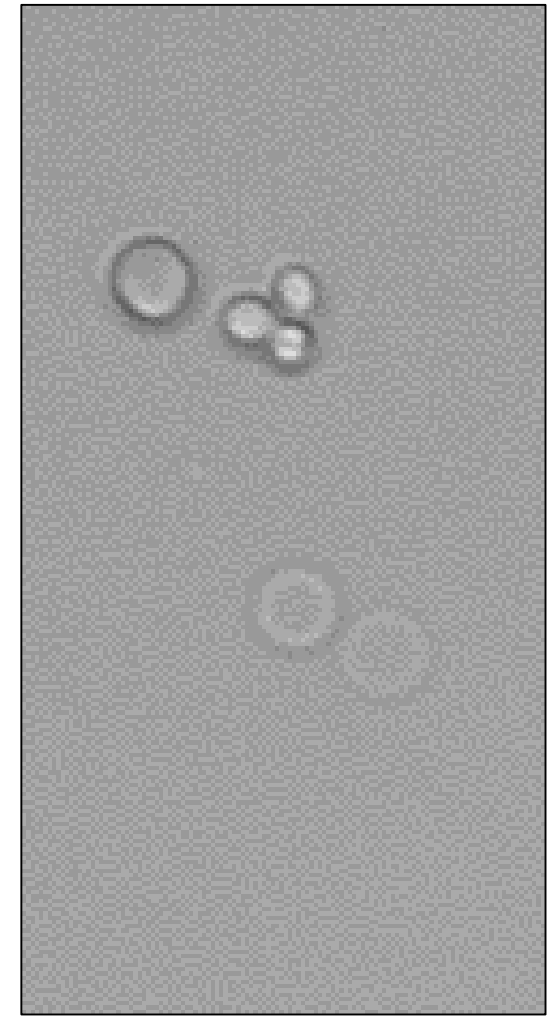
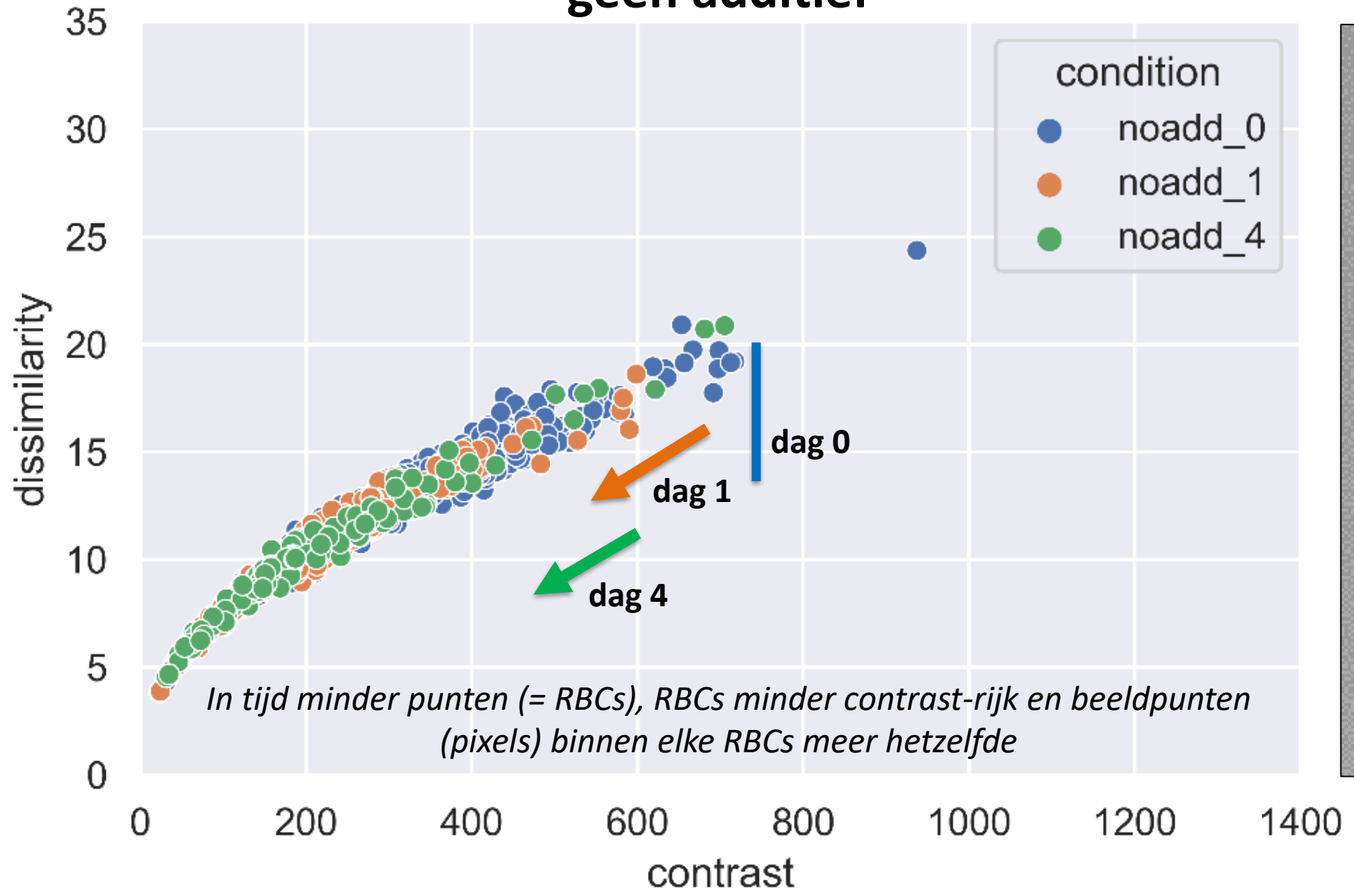


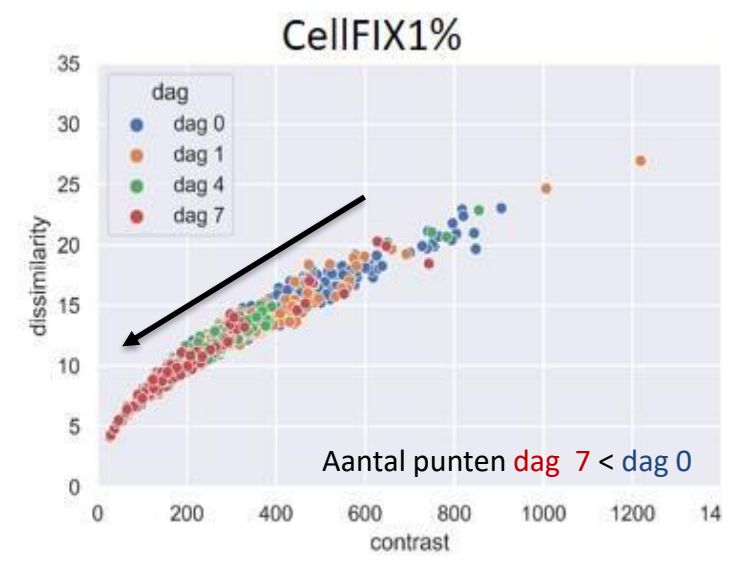
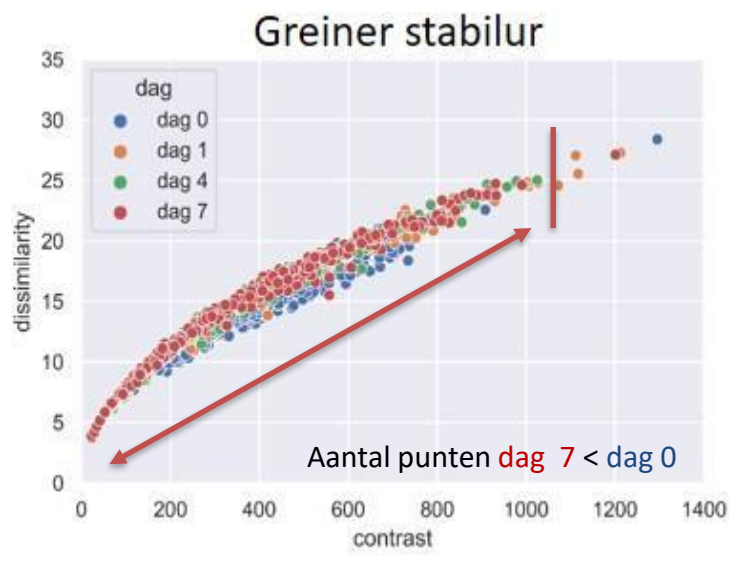
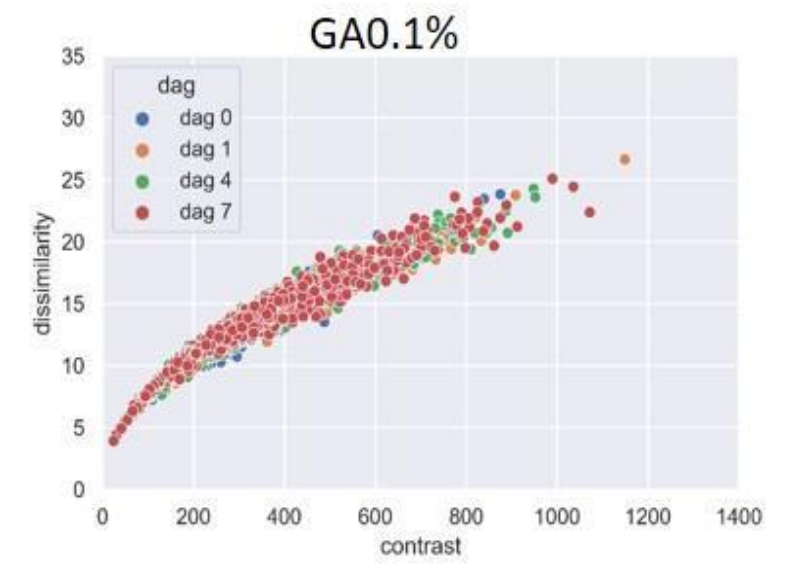
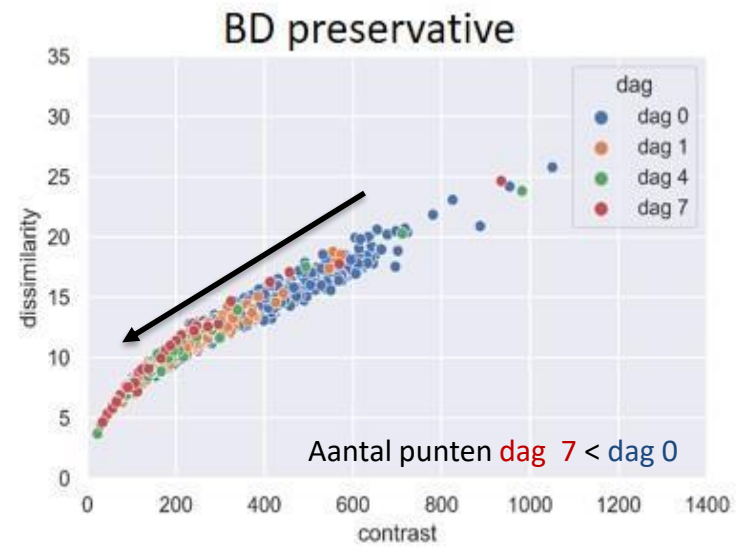
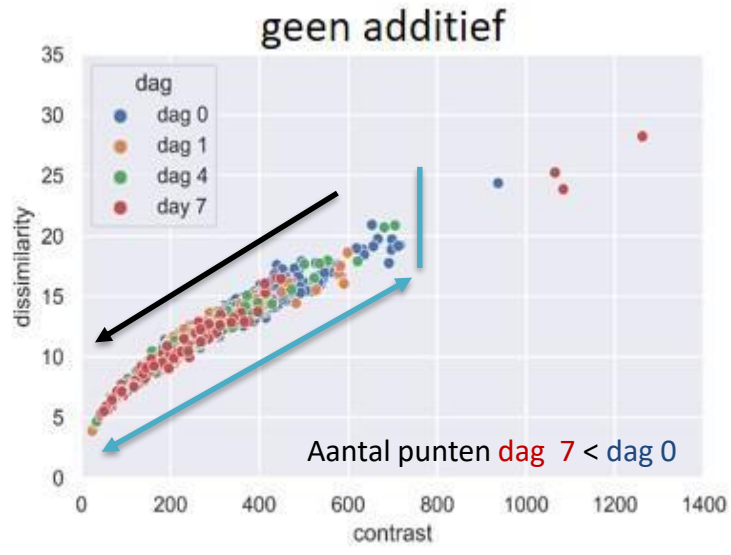
Objectief kwantificeren morfologische veranderingen



gebruik artificieel neurale netwerk (kunstmatige intelligentie)

geen additief





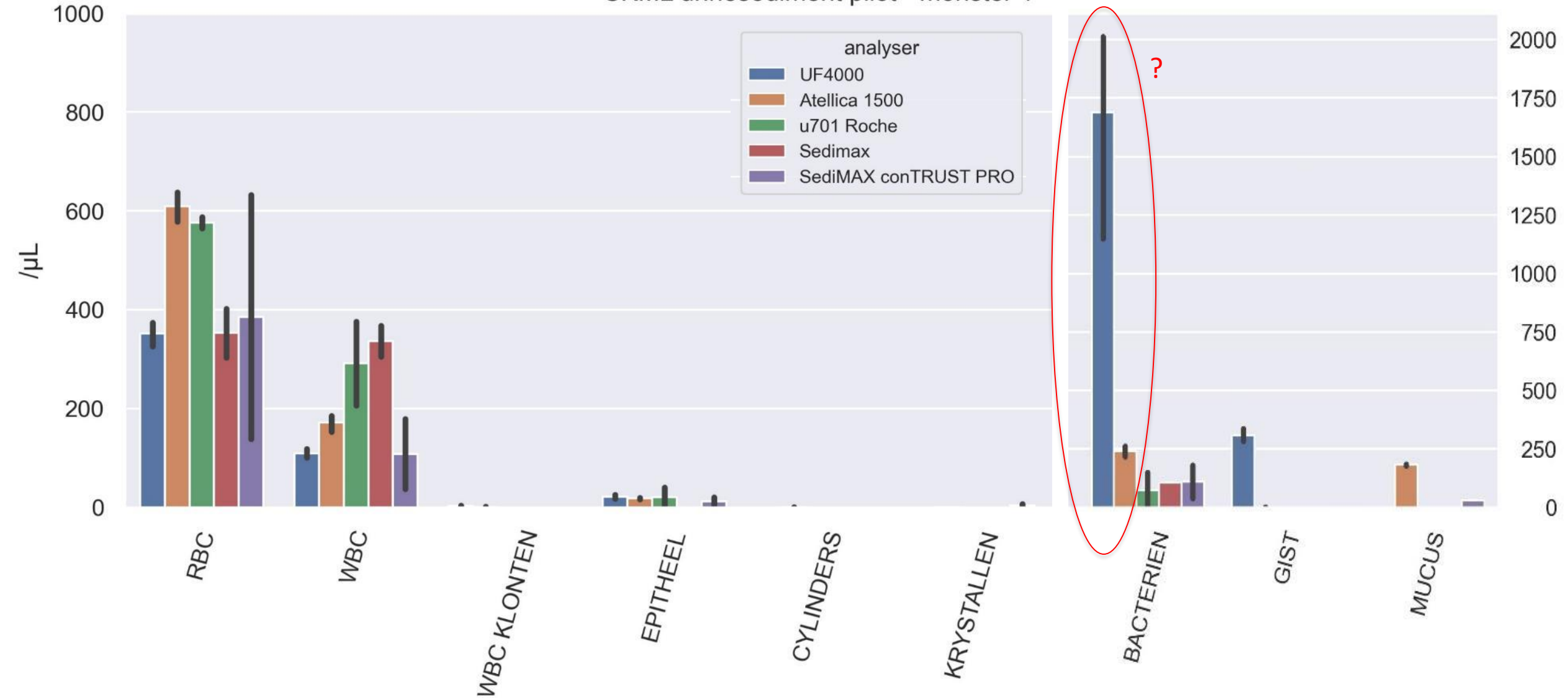
Pilot urinemonster rondzending

Concentratie GA 0,1%

17 deelnemende labs
Verschillende analysers



SKML urinesediment pilot - monster 1



AUA Richtlijn-2020, Nordic-2020, NVU-2023

Patient with microhematuria
 ≥ 3 RBC/HPF on UA with microscopy

Women age < 50; Men age < 40 yrs
Never smoker or < 10 pack-years
3-10 RBC/HPF on one UA

10-30 Pack-years smoking
11-25 RBC/HPF on one UA
One or more additional risk factors for

women and men age > 60 yrs
>30 Pack-years smoking
> 25 RBC/HPF on one UA

Samenvattend

- Digitale rondzending
- Rondzending met U-monster:
 - **vervolg optimalisatie en implementatie**

Experts en geïnteresseerde AIOS melden bij

ay.demir@meandermc.nl

Dank aan:

- UMC-U medewerkers van het speciaal lab – LKCH
- MMC medewerkers van het KCL
- SKML Ron Meijer

