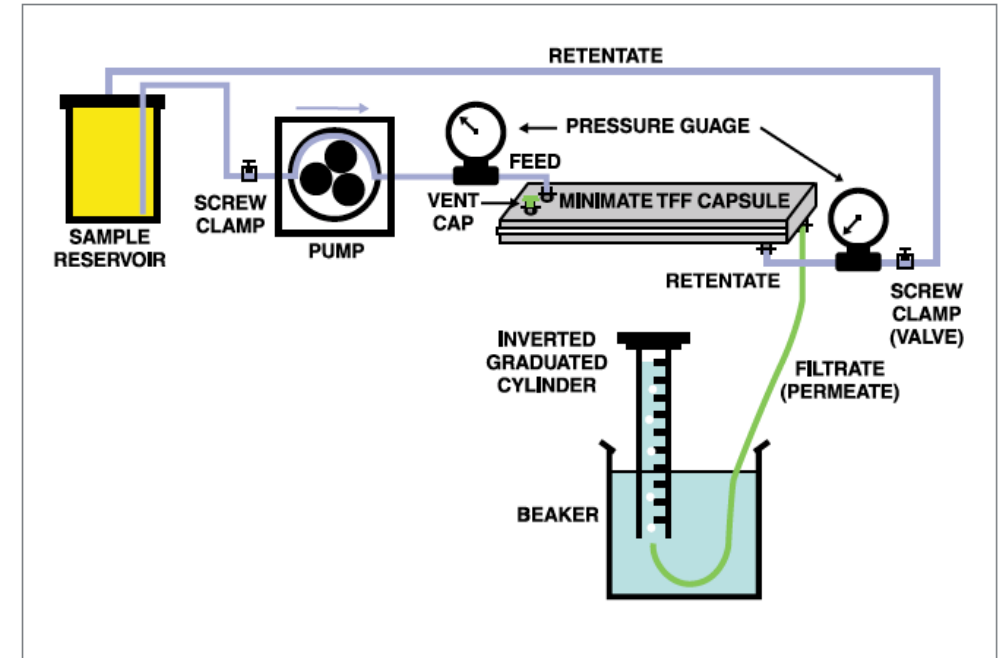
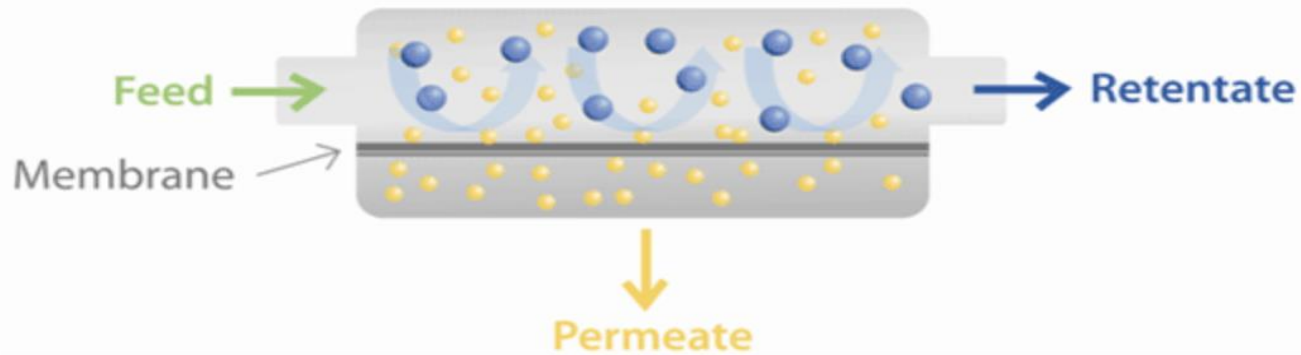


NOVEL TANGENTIAL FLOW FILTRATION (TFF)
METHOD FOR THE DETECTION OF
SARS-COV-2 IN WASTEWATER



INTRODUCTION TO TFF:

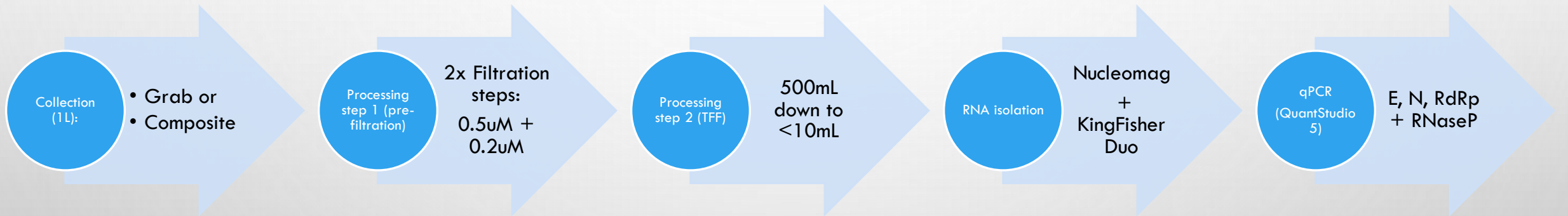


- SAMPLE SEPARATION BASED ON PARTICLE SIZE.
- SAMPLE MOVES PARALLEL TO THE FILTER – NOT FORCED THROUGH FILTER.
- RETENTATE IS RE-FILTERED TO CONTINUOUSLY CONCENTRATE THE SAMPLE FURTHER.

ADVANTAGES VS DISADVANTAGES:

| Advantages | Disadvantages |
|---|---|
| Shorter processing time | Relatively high setup costs ~R200 000 |
| Less hands-on time | More cluttered setup compared to ultra-centrifugation |
| Low cost per sample | Possible contamination if not washed properly between samples |
| Less destructive on viral particles (Could be used for various pathogens as well) | Possible cake formation |
| Relatively closed system | Breakthrough if pressure builds up |
| Reducing bigger volumes to workable volumes | Leakage near fittings/junctions |
| Easy to upscale to >1000L volumes | |

METHODS:



RESULTS:

(MAY-JUNE 2020)

| qPCR gene target | Min. Ct Values (Number of cycles) | Max. Ct Values (Number of cycles) |
|------------------|-----------------------------------|-----------------------------------|
| E-gene | 32 | 39 (Only 15x concentration) |
| RdRp-gene | 32 | 38 (Only 15x concentration) |
| N-gene | 33 | 37 (Only 15x concentration) |



| Total cost per sample: | |
|------------------------|----------------|
| Pre-filtration | R72.00 |
| TFF (Re-usable filter) | R24.00 |
| RNA isolation | R94.00 |
| qPCR | R169.00 |
| Labour | R440.00 |
| Consumables | R12.00 |
| <u>Total</u> | <u>R811.00</u> |

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National Institute for Communicable Diseases

ERWAT

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THANK YOU

