COVID-19 Surveillance Update

Presentation to SCCWRP Commission

June 11, 2021

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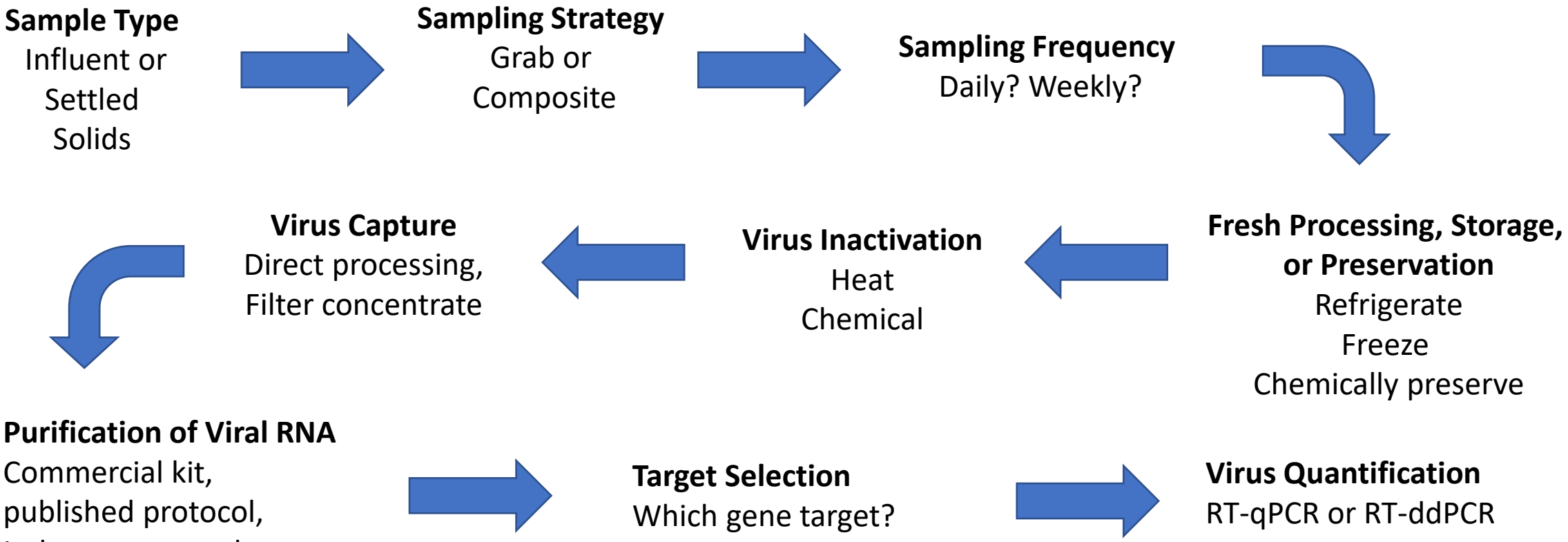
Background

- COVID-19 pandemic has put wastewater based surveillance of viral pathogens at the forefront of public health

- California's wastewater community has been active in Wastewater Based Surveillance for SARS-CoV-2
  - More than 40 facilities are presently monitoring and have at least six months of data
  - Several facilities (including SCCWRP member POTWs) have more than a year of data

- You have expressed interest in us continuing to work on data quality and ensuring the data are being used effectively

Potential Sources of Variability



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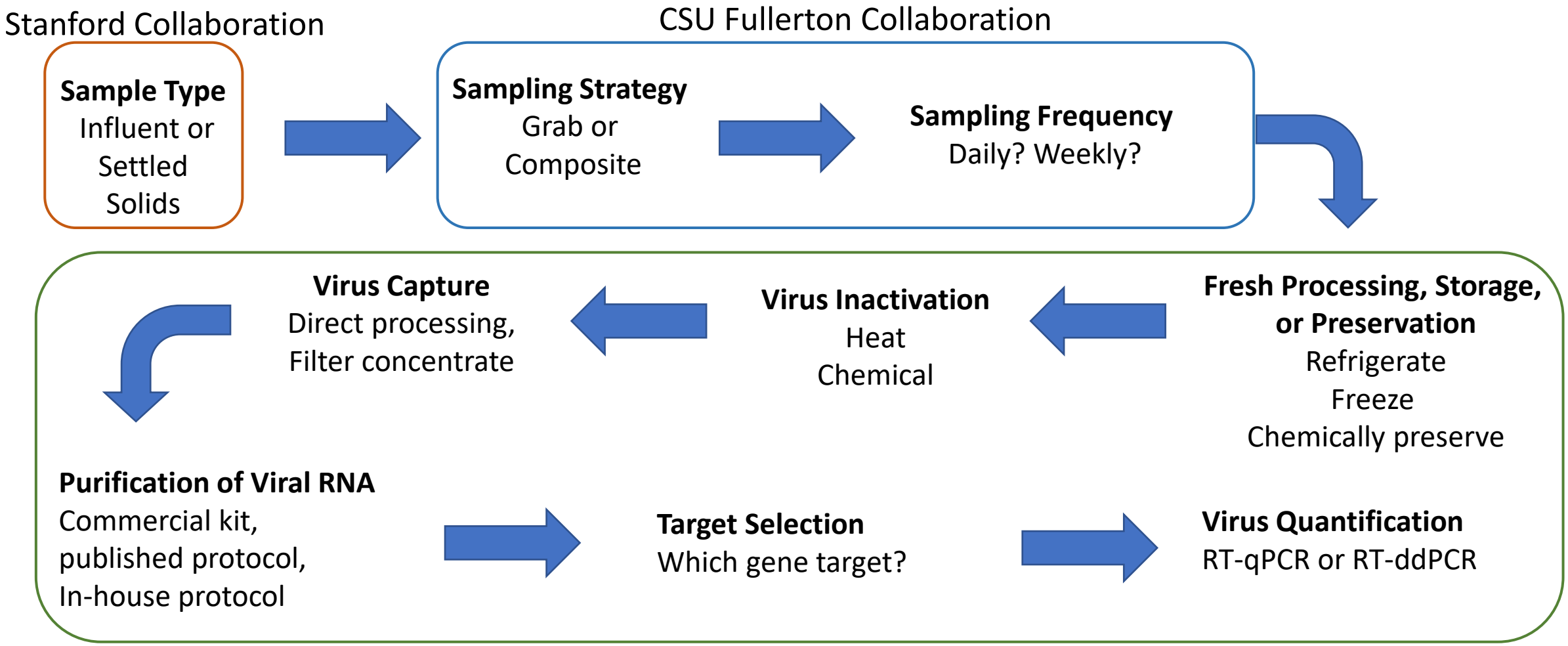

Manuscript sent to CTAG

From Method Comparison to Effective Data Use

- Our previous work focused on laboratory measurement methods
  - Variability
  - Sensitivity
- SCCWRP is coordinating the CA Water Quality Monitoring Council Committee on Wastewater Based Epidemiology
- Goal of WBE Committee is to identify how we can make better use of the wastewater data

WBE Committee Membership

Water Quality Monitoring Council members/alternates

- Steve Weisberg – Southern California Coastal Water Research Project Authority
- Karen Mogus – State Water Resources Control Board
- Peter Vroom – City of San Diego
- Brian Laurenson - CASQA

Public Health Community

- Mark Starr – California Department of Public Health
- Alex Yu - California Department of Public Health
- Mike Balliet - Santa Clara County Public Health

Wastewater Community

- Naoko Munakata – Los Angeles County Sanitation Districts
- Greg Kester – California Association of Sanitation Agencies

Research Community

- Ali Boehm – Stanford
- Josh Steele – Southern California Coastal Water Research Project Authority
- Kara Nelson – UC Berkeley
- Colleen Naughton – UC Merced

Two Use Cases

1. Descending SARS-CoV-2 case curve

2. SARS-CoV-2 variant analysis

Focus on Descending Case Curve

- WBE committee has realized best use of data is not in addressing questions about the ascending curve
- We know less about the descending phase, where there are fewer data streams
- Focus now on data uses for the descending side of the curve at the urging of the public health community

Suggestions to Improve Sensitivity

- Remove heat inactivation step
  - 50% of treatment plants using heat inactivation
- Concentrate or measure a larger volume
  - ~30% of labs are not concentrating
- Measure SARS-CoV-2 using digital RT-PCR
  - 60% of labs are using RT-QPCR
- Use sludge samples
  - 25% of labs are collecting sludge

Where the Committee is Taking this Information

- Used science done by SCCWRP to make recommendations to the wastewater measurement community

- Recommendations influencing wastewater measurement decisions throughout US

Two Use Cases

1. Descending SARS-CoV-2 curve

2. SARS-CoV-2 Variant Analysis

SARS-CoV-2 Variant Analysis

- SARS-CoV-2 variants in wastewater is a high priority for the Committee
  - High public health impact
- Science of measuring SARS-CoV-2 variants in wastewater is an active area of research
- Two approaches to measuring SARS-CoV-2 variants
  - Targeted analysis to look for every individual variant
  - Broad screening of viral genomes using sequencing

Suggestions on SARS-CoV-2 Variants

- Because methods are not yet standardized, committee recommends working with your local researcher
- SCCWRP is collaborating with UCI, Stanford, UNC, and others
- Test and refine methods to identify and track variants in wastewater