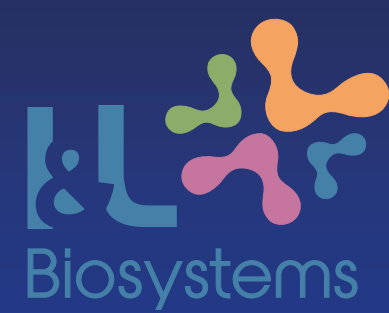


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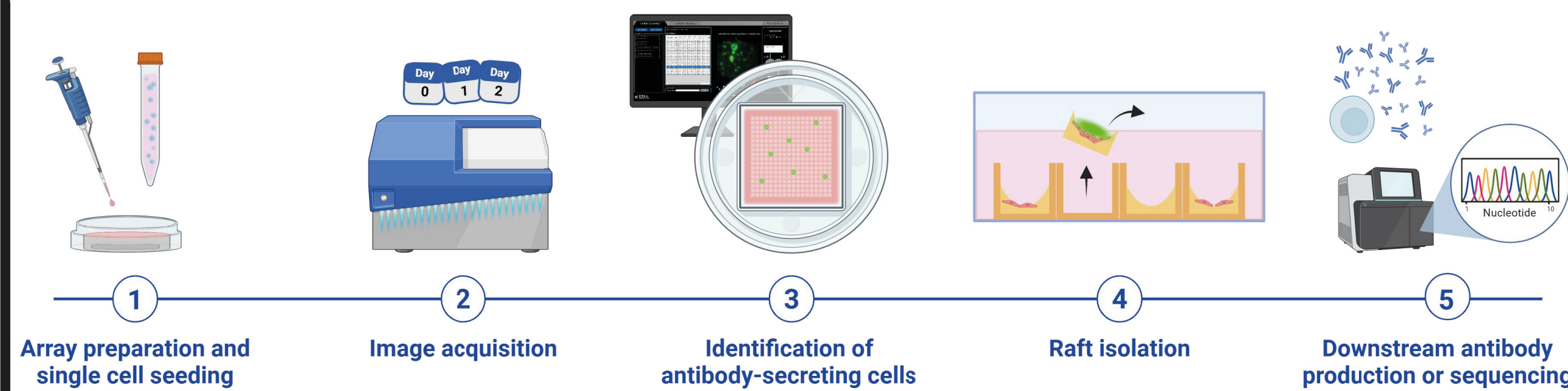
# Antibody Discovery, Screening, and Production using CellRaft® Technology

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## Background

- The development and production of novel monoclonal antibodies (mAbs) requires a method to screen and isolate monoclonal antibody-producing cells. This is often achieved by performing Enzyme-Linked Immunosorbent Assays (ELISAs) on thousands of single cells, a highly laborious and resource-intensive process.
- CellRaft Technology provides streamlined workflows for the identification and clonal selection of antibody-secreting cells for downstream antibody production or molecular analysis.

## CellRaft Technology workflow



Single antibody-secreting cells are seeded on a CellRaft Array containing 40,000 microwells and imaged on the CellRaft AIR® System. CellRafts containing monoclonal antibody-secreting cells are identified using the CellRaft Cytometry image analysis software and isolated to a collection vessel for downstream production or molecular analysis. Figure created in BioRender.

## Primary plasma B cells

- Primary plasma B cells isolated from an ovalbumin (OVA)-vaccinated mouse were seeded on a CellRaft Array (80,000 cells screened) with fluorescent detection reagents.
- Single B cells secreting OVA-specific IgG were isolated for heavy and light chain sequencing.

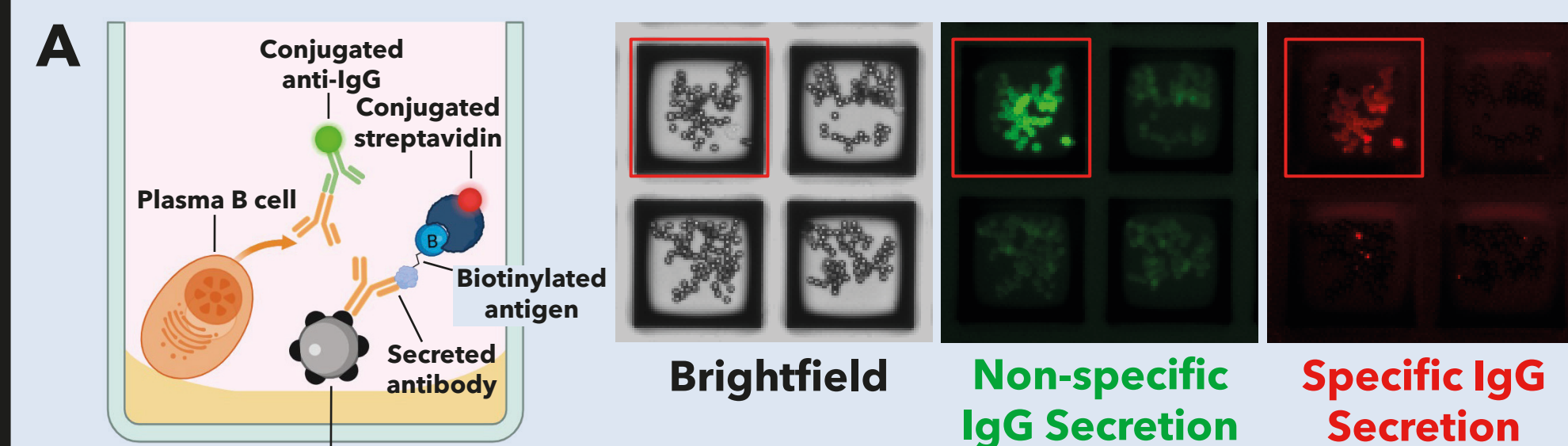
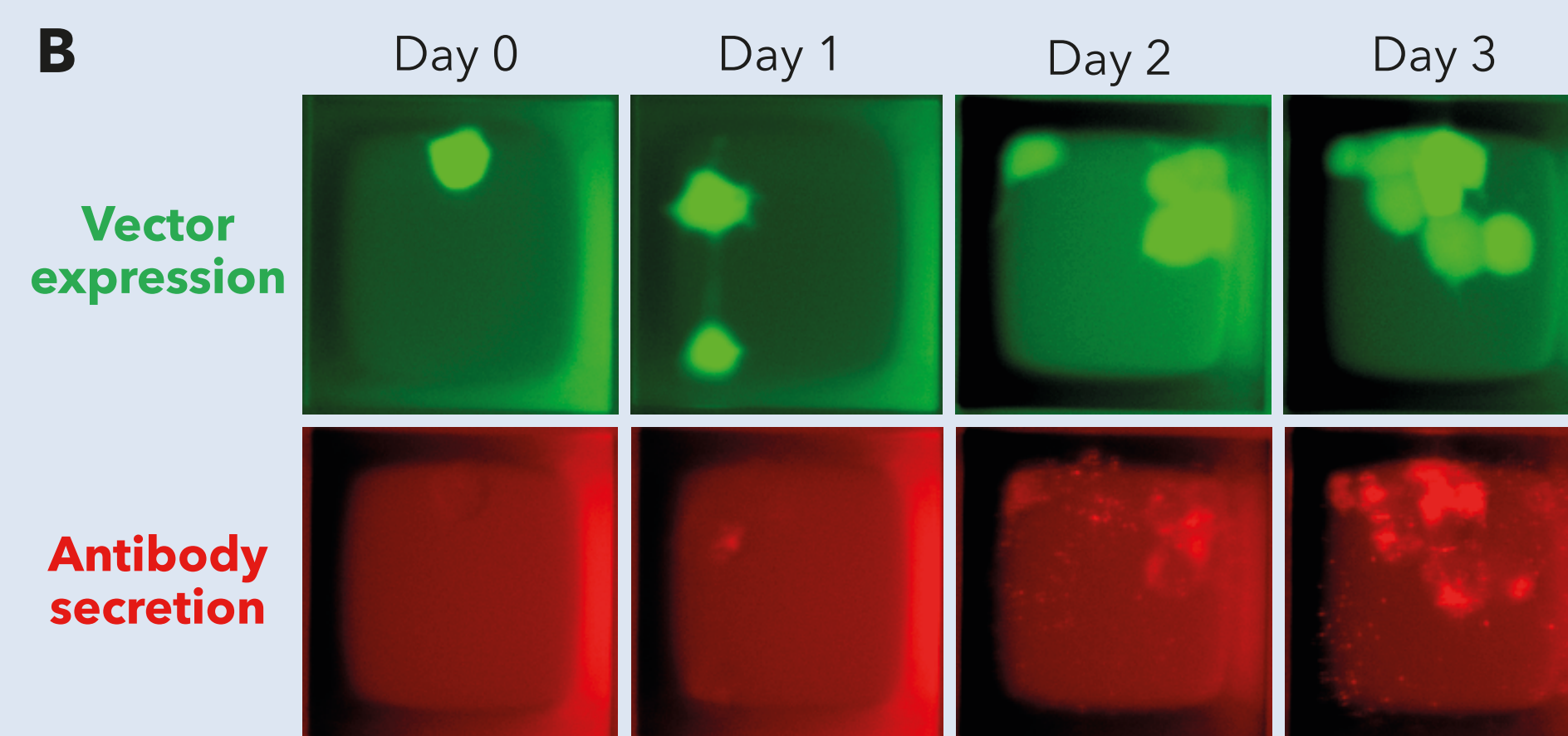
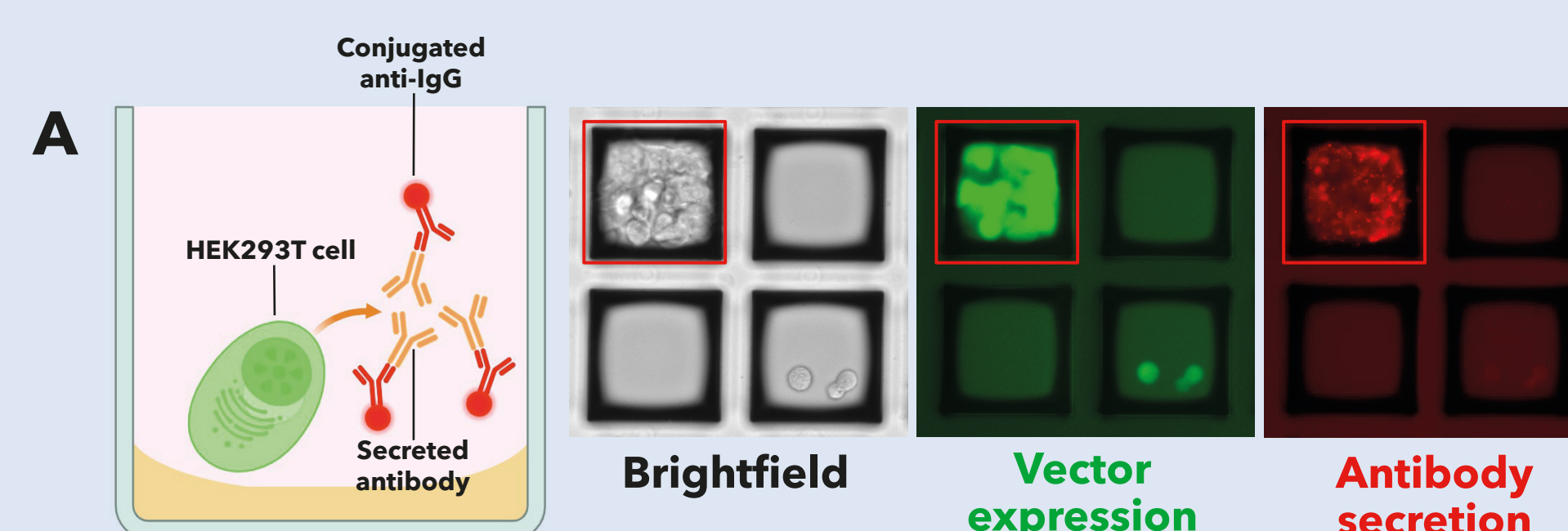


Figure created in BioRender

## Recombinant antibody producing cells

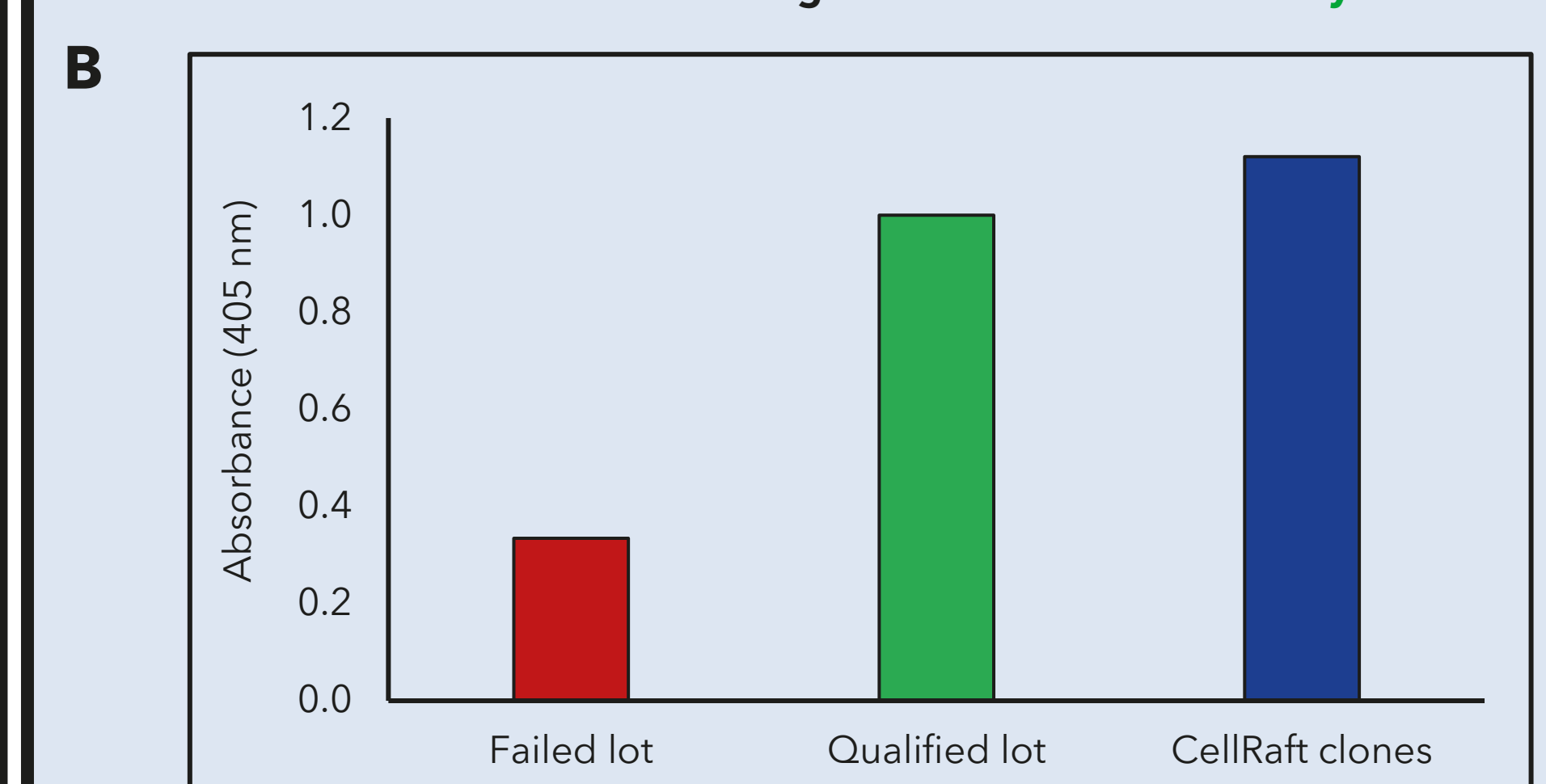
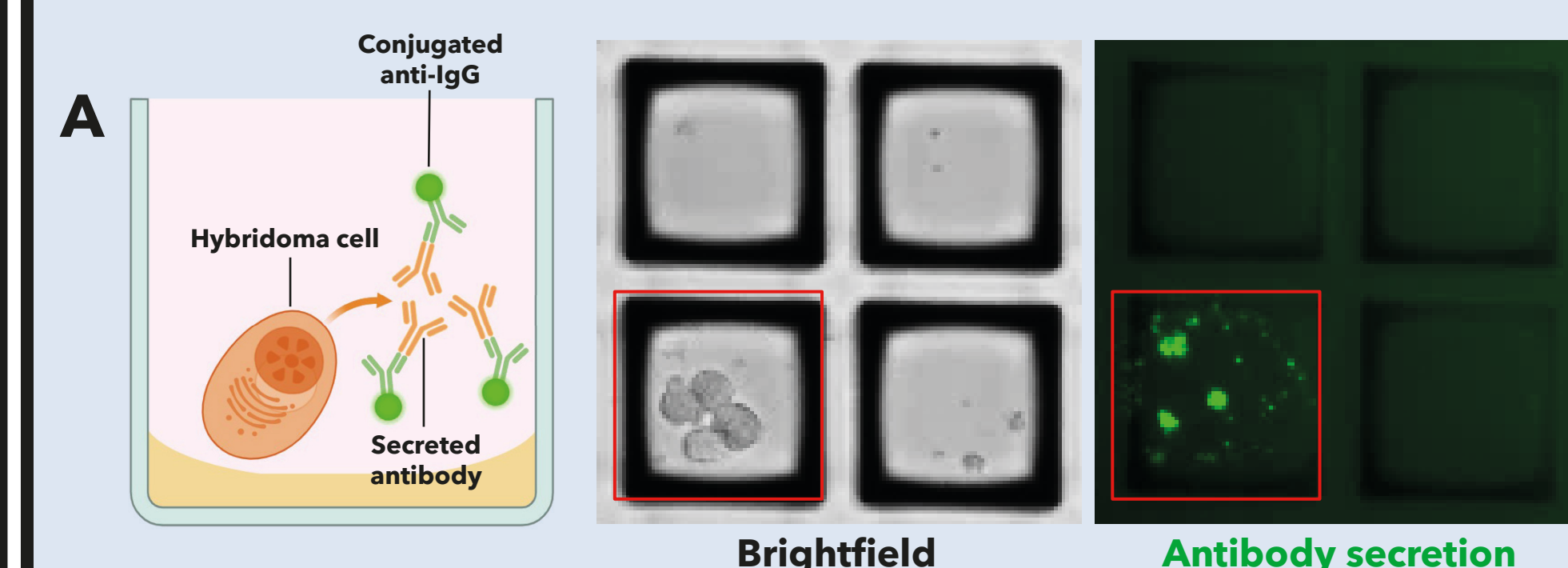
- HEK293T cells co-expressing GFP and recombinant anti-Her2 antibody were seeded on a CellRaft Array (50,000 cells screened) with a fluorescent antibody detection reagent.
- Monoclonal antibody-secreting cells were recovered for downstream mAb production.



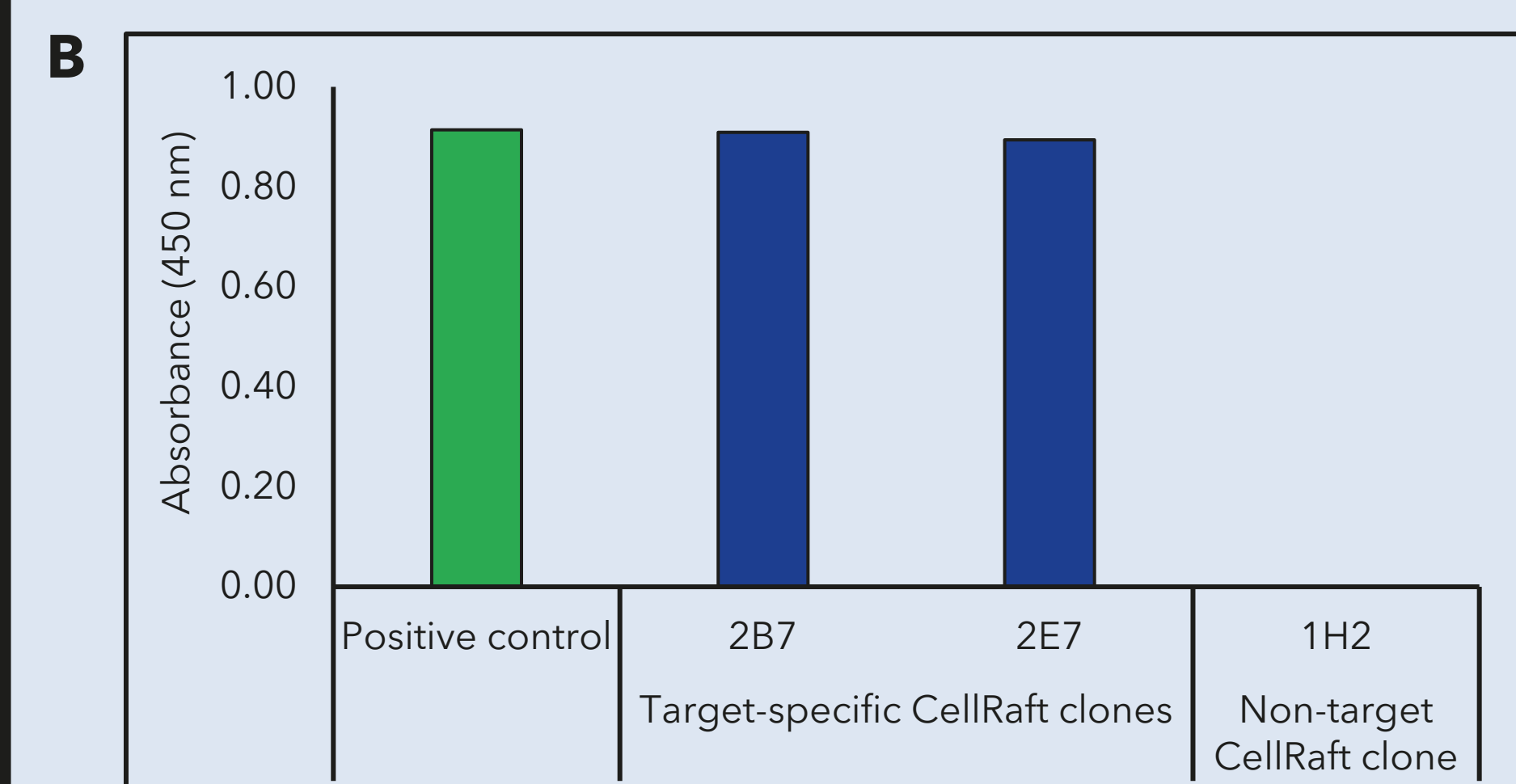
- **(A)** Colonies co-expressing GFP and anti-Her2 mAb (red) were easily identified within the CellRaft Array.
- **(B)** Time-course imaging of edited HEK293T cells allowed for tracing of monoclonality of antibody-secreting colonies. 1,560 antibody-secreting monoclonal colonies were available for recovery and expansion from one CellRaft Array.

## Hybridoma cell lines

- A hybridoma cell line with diminished antibody yield (0.3% of cells secreting antibody) was seeded on a CellRaft Array (20,000 cells screened) with a fluorescent antibody detection reagent.
- Monoclonal antibody-secreting cells were recovered to restore high mAb yield in the hybridoma line.



- **(A)** Clones secreting IgG antibody were easily identified within the CellRaft Array.
- **(B)** ELISA screening of antibody purified from CellRaft clones revealed restoration of antibody titer to levels that qualified for commercial use in less than 1 month from single cell seeding to cell banking.



- **(A)** Antigen-specific IgG-secreting cells were detected with a two-color fluorescent signal in the CellRaft Array.
- **(B)** Recombinant mAbs generated using OVA specific sequences had comparable reactivity to a positive control anti-OVA antibody, while a mAb from a B cell secreting non-specific IgG did not exhibit OVA reactivity.