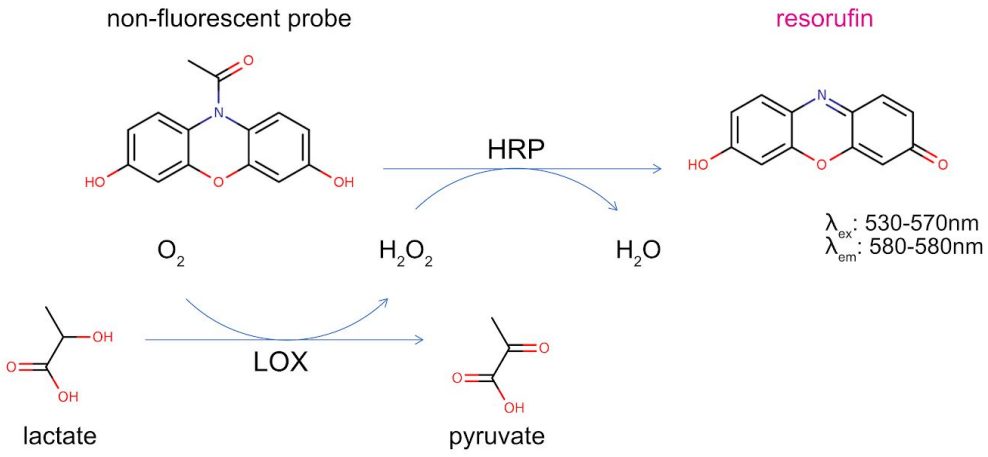
Supplementary data

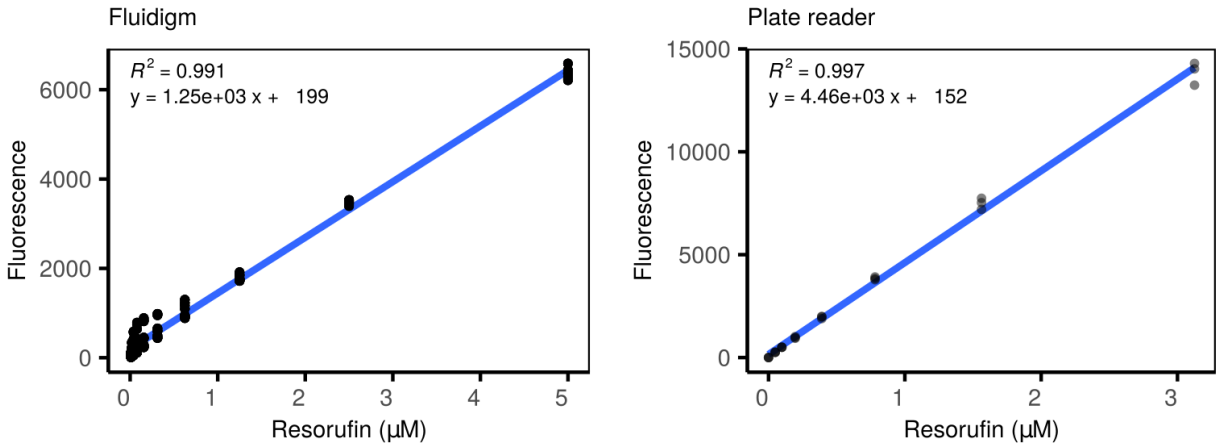
Supplementary table 1 | **Fluorescent filters available in the Fluidigm system.**

Excitation filter	**Emission filter**
475-41 nm	525-25 nm
530-16 nm	570-30 nm
575-31 nm	630-30 nm
632-27 nm*	700-30 nm*

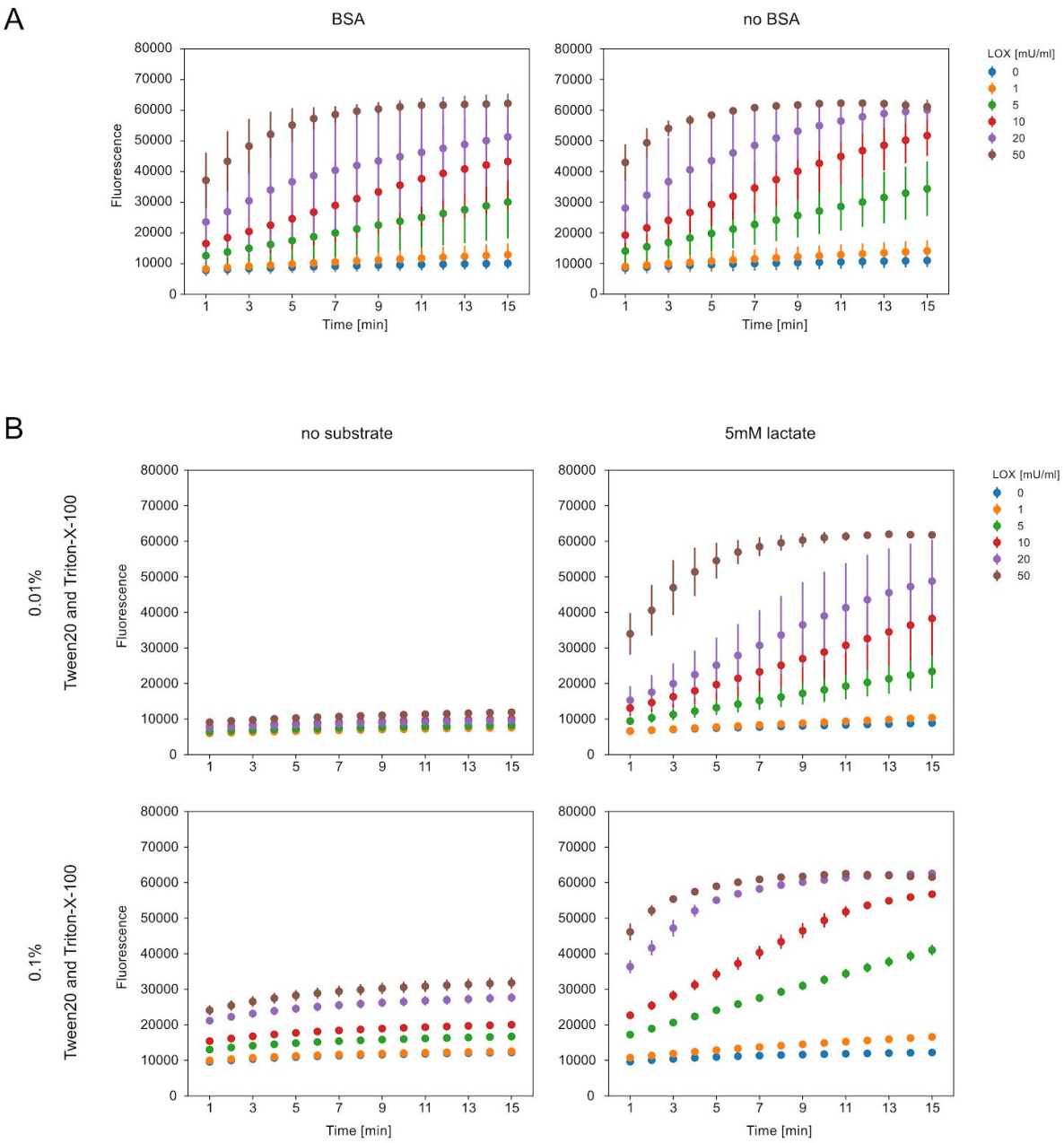
*optional filter



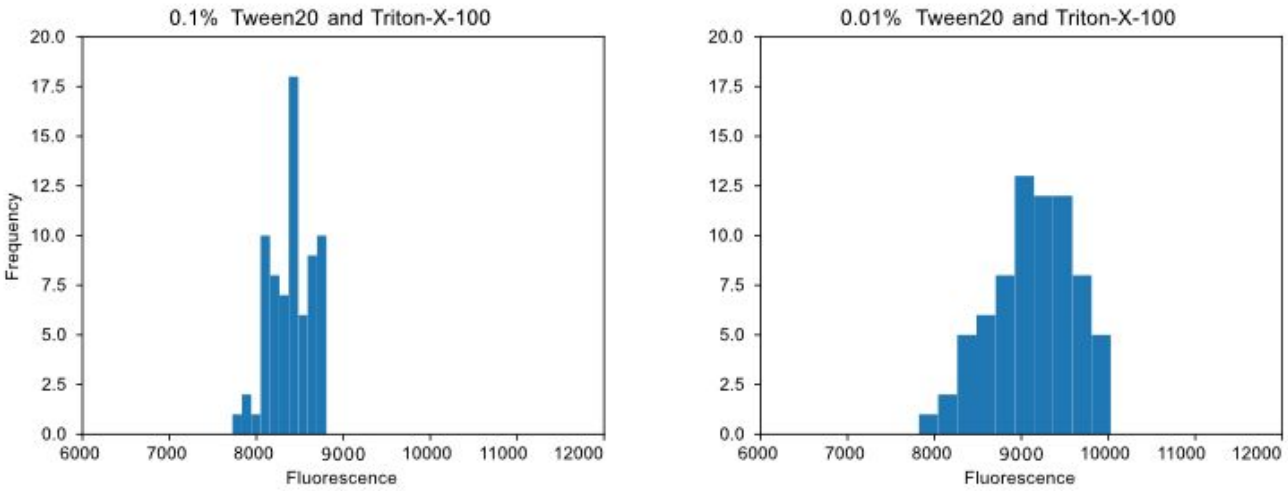
Supplementary figure 1 | **Reaction scheme of fluorescent assay for hydrogen peroxide detection on example of lactate oxidase.** Lactate is oxidised to pyruvate by lactate oxidase (LOX), generating hydrogen peroxide which reacts with a non-fluorescent probe AmplifluRed in the presence of horseradish peroxidase (HRP) to produce the fluorescent oxidation product, resorufin.



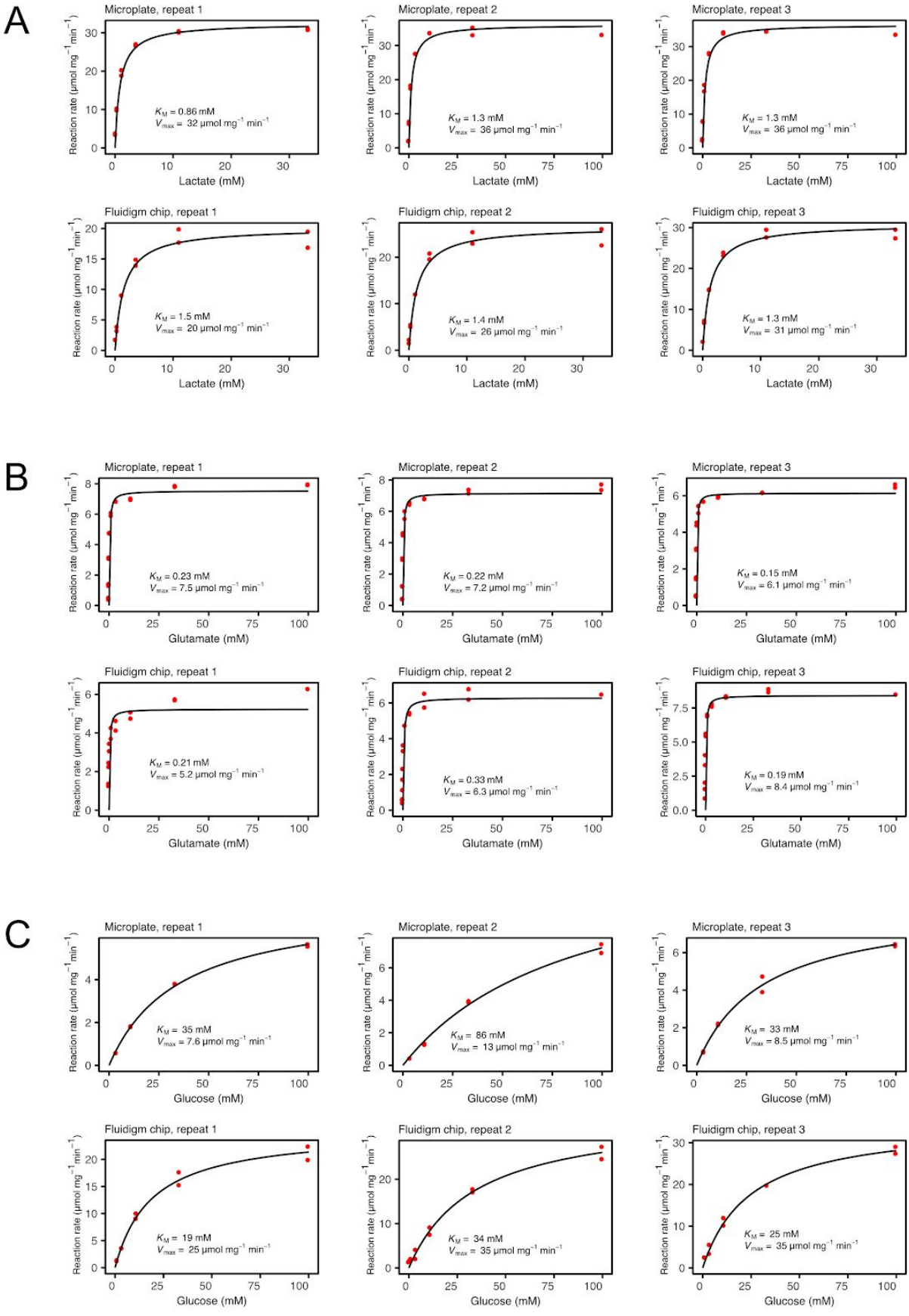
Supplementary figure 2 | **Resorufin fluorescence in the Fluidigm system and microplate reader.** Represented are ranges for linear responses captured in the two systems, subsequently used as resorufin standard curves.



Supplementary figure 3 | **Influence of buffer composition on fluorescent readout in the Fluidigm system**. (A) Fluorescent readouts for samples in buffers with and without addition of 0.01mg/ml BSA (final concentration), in presence of 5mM lactate. (B) Fluorescent readouts for samples in buffers with 0.01% and 0.1% concentration of detergents (Tween20 and Triton-X-100). Lactate oxidase (LOX) was used in these experiments. Error bars represent standard deviation of the data obtained with four replicates.



Supplementary figure 4 | **Distribution of fluorescent signal of the loading control fluorescein**. Signals from samples containing detergents Triton-X-100 and Tween20 in the concentration of 0.1% (left) and 0.01% (right).


A
Microplate, repeat 1
K_M = 0.86 mM
V_{max} = 32 µmol mg^{-1} min^{-1}
Microplate, repeat 2
K_M = 1.3 mM
V_{max} = 36 µmol mg^{-1} min^{-1}
Microplate, repeat 3
K_M = 1.3 mM
V_{max} = 36 µmol mg^{-1} min^{-1}
Fluidigm chip, repeat 1
K_M = 1.5 mM
V_{max} = 20 µmol mg^{-1} min^{-1}
Fluidigm chip, repeat 2
K_M = 1.4 mM
V_{max} = 26 µmol mg^{-1} min^{-1}
Fluidigm chip, repeat 3
K_M = 1.3 mM
V_{max} = 31 µmol mg^{-1} min^{-1}
Reaction rate (µmol mg^{-1} min^{-1})
Lactate (mM)
B
Microplate, repeat 1
K_M = 0.23 mM
V_{max} = 7.5 µmol mg^{-1} min^{-1}
Microplate, repeat 2
K_M = 0.22 mM
V_{max} = 7.2 µmol mg^{-1} min^{-1}
Microplate, repeat 3
K_M = 0.15 mM
V_{max} = 6.1 µmol mg^{-1} min^{-1}
Fluidigm chip, repeat 1
K_M = 0.21 mM
V_{max} = 5.2 µmol mg^{-1} min^{-1}
Fluidigm chip, repeat 2
K_M = 0.33 mM
V_{max} = 6.3 µmol mg^{-1} min^{-1}
Fluidigm chip, repeat 3
K_M = 0.19 mM
V_{max} = 8.4 µmol mg^{-1} min^{-1}
Reaction rate (µmol mg^{-1} min^{-1})
Glutamate (mM)
C
Microplate, repeat 1
K_M = 35 mM
V_{max} = 7.6 µmol mg^{-1} min^{-1}
Microplate, repeat 2
K_M = 86 mM
V_{max} = 13 µmol mg^{-1} min^{-1}
Microplate, repeat 3
K_M = 33 mM
V_{max} = 8.5 µmol mg^{-1} min^{-1}
Fluidigm chip, repeat 1
K_M = 19 mM
V_{max} = 25 µmol mg^{-1} min^{-1}
Fluidigm chip, repeat 2
K_M = 34 mM
V_{max} = 35 µmol mg^{-1} min^{-1}
Fluidigm chip, repeat 3
K_M = 25 mM
V_{max} = 35 µmol mg^{-1} min^{-1}
Reaction rate (µmol mg^{-1} min^{-1})
Glucose (mM)

Supplementary figure 5 | **Comparison of kinetic values obtained in the Fluidigm system and a plate reader.** Michaelis-Menten curves of three repeats in each system for the three tested oxidases: (A) Lactate oxidase. (B) Glutamate oxidase. (C) Glucose oxidase.