Supplementary Information

Common Microcirculatory Framework for Monitoring Integrated Microcirculation

Short running title: Common Microcirculatory Framework

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Supplementary Table S1

Ranges and dimensions (units) of multiple variables of common microcirculatory framework.

Microcirculatory parameters	Instruments	Ranges	Units
SO_2	O2C	0 - 100	%
rHb	O2C	0 - 150	AU
PO_2	Microx TX3	0 - 409.5	% air sat.
BP	VMS	0 - 1000	PU
Velocity	VMS	0 - 150	PU

Notes: SO_2, hemoglobin oxygen saturation. rHb, the relative amount of hemoglobin. PO_2, partial oxygen pressure. O2C (Oxygen to See). Microx TX3 (micro fiber-optic oxygen transmitter). VMS (Vascular Monitoring System). AU, arbitrary unit. % air sat., % air saturation. BP, blood perfusion. PU, perfusion unit.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.6084/m9.figshare.13311512.

List of Supplementary Videos

Supplementary Video S1. mp4

Supplementary Video S2. mp4

Supplementary Video S3. mp4

Supplementary Video S4. mp4

Supplementary Video S5. mp4

Supplementary Legends

Supplementary Video S1. Unstandardized common microcirculatory framework. Python (version 3.7.4, https://www.python.org） and Apache ECharts (released version 4.2.0-RC.2, https://echarts.apache.org) were employed to establish and visualize the unstandardized three-dimensional (3-D) common microcirculatory framework. ScreenToGif (version 2.19.3, URL: https://www.screentogif.com/) was used to record the supplementary video as a MP4 file. Microcirculatory oxygen and microhemodynamics parameters, including hemoglobin oxygen saturation (SO_2), the relative amount of hemoglobin (rHb), partial oxygen pressure (PO_2), microvascular blood perfusion, and blood flow velocity, were integrated and displayed in the 3-D framework without dimensionless processing. Time course, microcirculatory variables, and real values were defined as the X, Y, and Z axis of the dynamic 3-D common microcirculatory framework, respectively, with a color bar depicting real values.

Supplementary Video S2. Z-score normalized common microcirculatory framework. The Z-score normalized 3-D common microcirculatory framework was generated by Apache ECharts. The microcirculatory oxygen and microhemodynamic data set, including SO_2, rHb, PO_2, blood perfusion, and velocity, was integrated into the framework. The X, Y, and Z axis represented the time course, pancreatic microcirculatory variables, and calculated values, respectively. Calculated values were depicted by color bars. The video was recorded by ScreenToGif in form of MP4.

Supplementary Video S3. Min-max normalized common microcirculatory framework. The demo microcirculatory parameters (SO_2, rHb, PO_2, blood perfusion, and velocity) were normalized by Min-max normalization and imported into the established 3-D module, in which the time course, pancreatic microcirculatory variables, and calculated values were defined as the X, Y, and Z axis respectively. The color bar depicts the calculated values.

Supplementary Video S4. L2 normalized common microcirculatory framework. The microcirculatory oxygen and micro-hemodynamic data set normalized by L2 normalization were integrated into the 3-D module. The X, Y, and Z axis of common microcirculatory framework represent the time course, microcirculatory variables, and calculated values. The color bar depicts the calculated microcirculatory functional values.

Supplementary Video S5. Median scaling normalized common microcirculatory framework. The microcirculatory demo data set processed with median scaling was imported into the 3-D common microcirculatory framework. Time course, microcirculatory variables, and calculated values were defined as the X, Y, and Z axis respectively. The color bar depicts the calculated value.