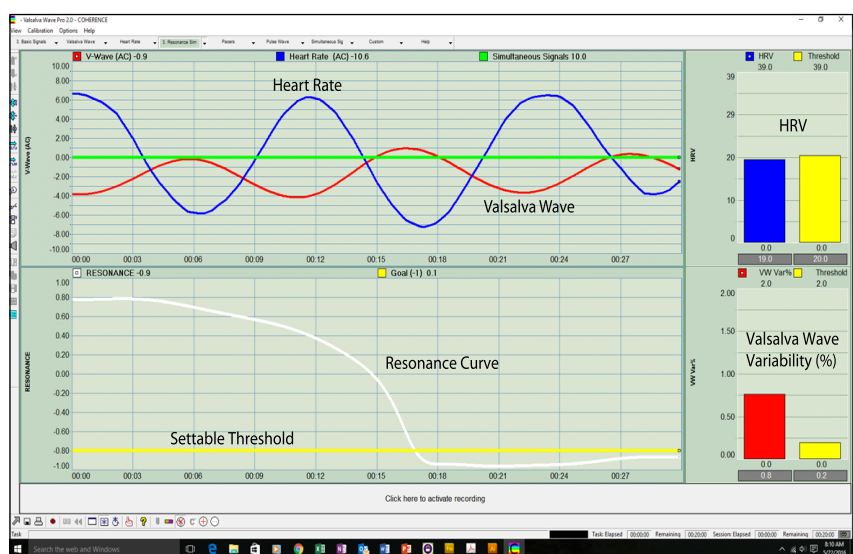


THE PHYSIOLOGY OF RESONANCE

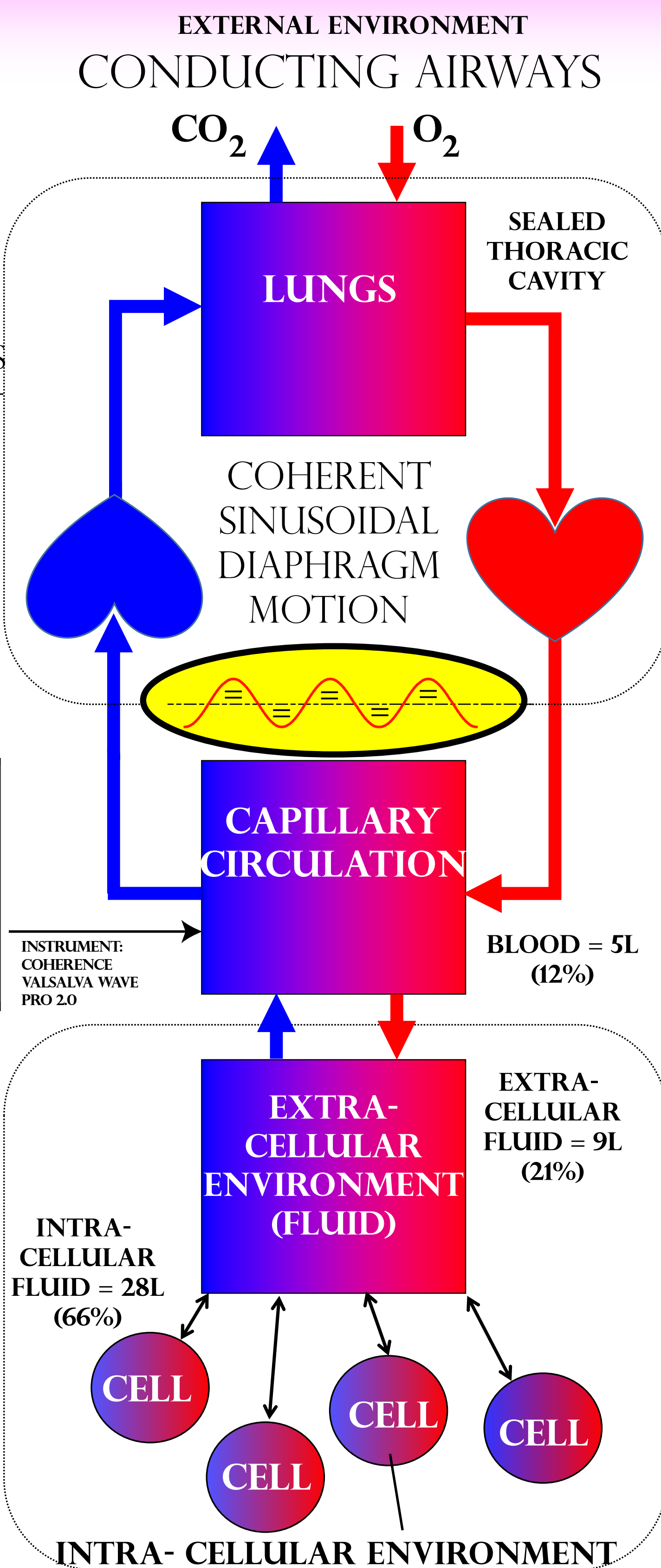
16. SYNCHRONY OF THE HEART RATE WITH BREATHING IS MAINTAINED AND THE CIRCLE IS COMPLETE.
15. EXHALATION IS COMPLETE. INHALATION NATURALLY BEGINS, THE DIAPHRAGM MOVING DOWNWARD. FLOW RISES IN THE VENOUS TREE EXERTING NEGATIVE PRESSURE ON THE CELLULAR ENVIRON, EXPORTING CELLULAR WASTE, LYMPH.

RESONANCE PHASE SYNCHRONY OF HEART RATE WITH BREATHING INDUCED VALSALVA WAVE



OBSERVED AT CAPILLARY CIRCULATION (EARLOBE)

14. WAVE RISES IN ARTERIAL TREE, PROPAGATING TO FAR REACHES OF CELLULAR ENVIRON.
13. ARTERIAL WALLS RELAX - ARTERIES WIDEN TO ACCOMMODATE BLOOD VOLUME.
12. HEART RATE SLOWS AND BUCKET SIZE INCREASES TO ACCOMMODATE VOLUME EXITING LUNGS.



- 1.** DIAPHRAGM MOVES DOWN. PRESSURE IN SEALED THORACIC CAVITY BECOMES RELATIVELY NEGATIVE.
- 2.** LOW PRESSURE DRAWS VENOUS BLOOD INTO LUNGS VIA RIGHT HEART.
- 3.** VIA COMPLIANCE, LUNGS EXPAND TO ACCOMMODATE INCREASED VOLUME OF BLOOD.
- 4.** HEART RATE INCREASES TO SHUTTLE BLOOD INTO LOW PRESSURE ENVIRONMENT OF LUNGS.
- 5.** ARTERIAL FLOW AND PRESSURE FALL.
- 6.** ARTERIAL WALLS CONSTRICT, NARROWING ARTERIES SO AS TO MAINTAIN ARTERIAL PRESSURE AND FLOW.
- 7.** AIR MOVES FROM ENVIRONMENT TO FILL LUNGS, MEETING VENOUS BLOOD.
- 8.** GAS EXCHANGE OCCURS, CO₂ FOR O₂.
- 9.** INHALATION IS COMPLETE. EXHALATION BEGINS.
- 10.** DIAPHRAGM MOVES UP. PRESSURE IN THORACIC CAVITY BECOMES RELATIVELY POSITIVE.
- 11.** VIA ELASTICITY, LUNGS SHRINK, EJECTING A VOLUME OF BLOOD EQUAL TO THAT ACCUMULATED DURING INHALATION TO LEFT HEART.

BLOOD AND FLUIDS ARE FLOWING IN A CIRCLE, HENCE "CIRCULATION". THE MOTIVE FORCE IS SINUSOIDAL DIAPHRAGM MOVEMENT.

TOTAL BODY FLUIDS INCLUDING CEREBROSPINAL FLUID, LYMPH, AND SYNOVIAL FLUID = 42L (100%)