SAP FLOW IS POWERED BY COMMON ESERGONIC CYTOPLASMIC AND MITOCHONDRIAL PATHWAYS. Carl W. Vermeulen, Adam V Farfan, Mark A Harb, Rebekah Wilson, Shelby C Felts, Triston L Holland, Brandon Jones, Michael Decormier, Katie E Greer, Dominic G Ellis, Rebekah R McDonald, Tiffany N Taylor, Cynthia Thibeault, Erika N Wallace, and Patrick E Ford. Camp Comunity College. In stems in all types of vascular plants - both terrestrial and fully aquatic, xylem flow is selectively blocked by sucrose and by inhibitors of glycolysis (fluoride and bisulfite) as well as of mitochondria (azide and malonate). Thus, the flow is ATP-driven rather than by the now discredited non-biological mechanisms such as leaf draw, capillary action and/or root pressure. Furthermore, upward flow is not only augmented by entrapped gas bubbles, but it is also indiscriminate as to monosaccharide and artificial-sweetener content. In roots, xylem flow is only sensitive to glycolysis inhibitors indicating independence from aerobic processes. On the other hand, phloem flow is somewhat less energy demanding implicating the Entner-Douderoff path rather than glycolysis, but nonetheless also involving mitochondrial Krebs Cycle activity. Author contact: Carl W.Vermeulen, ecoligist@yahoo.com.