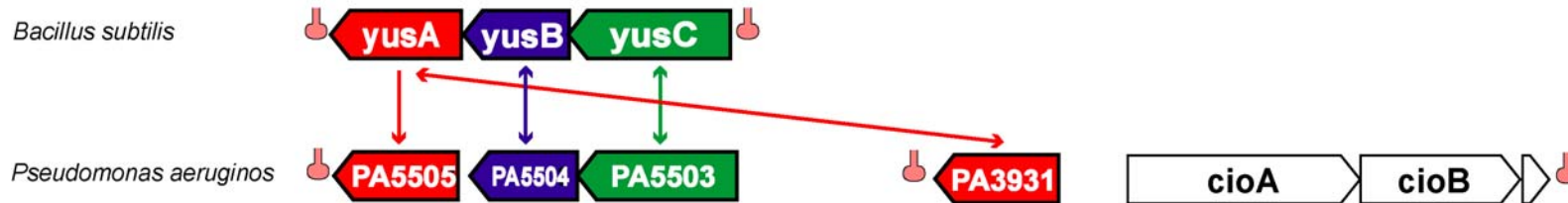


Supplementary material: Function of an isolated inparalog



Example of an inconsistent pattern between sequence identity and gene-neighborhood conservation, involving the 'isolated' inparalog PA3931. YusA, PA5505 and PA3931 are annotated as the substrate binding component of an ATP-binding cassette (ABC) transporter system (the other components of the system are colored blue and green). However, sequence comparison reveals a BBH between yusA and PA3931, but these do not have a conserved gene-neighborhood and we cannot associate PA3931 to a specific process based on its gene-neighborhood (the white colored genes CioA, CioB and a small unknown gene are not ABC transporter components). PA3931 is, therefore, considered as an isolated inparalog. The Second Best Hit (SBH) of yusA, which is PA5505, is the most likely functional equivalent, because it conserves the essential ABC transporter components. Nevertheless, PA3931 can still be functionally associated to its ancestral ABC transporter components (colored blue and green), but active under specific cellular conditions.