The development of powered flight in insects is an attribute that has helped them to become the most successful organisms on earth. Flightin, a 20kDa protein is only expressed in the asynchronous indirect flight muscle (IFM) of *Drosophila melanogaster*. This protein is essential for filament assembly, stability, and integrity of the sarcomere of IFM; its absence leads to a flightless phenotype but does not affect viability. Flightin contains a conserved region of approximately fifty-five amino acids (WYR) which has been used to explore for the presence of the flightin gene outside of the Order Diptera. Sequence analysis has revealed that the presence of flightin is wide spread among the insects including wingless insects and crustaceans. These results suggest that flightin has a function in addition to its role in the IFM. Our current focus is to trace the evolutionary history of flightin from a common aquatic ancestor in order to understand how flightin became restricted to flight muscle. Using the WYR region we are currently assessing the mRNA distribution of flightin by RT-PCR and *in situ* hybridization in various insects (larval & adult stages) and crustaceans. Preliminary results revealed that flightin is ubiquitously expressed during the larval stage of aquatic insects. In addition, sequence analyses of the WYR region from insect aquatic larvae revealed characteristics found only in crustacean WYR. The results have implications in phylogenetic models that propose a closed kinship between hexapods and crustaceans.