

Many microorganisms harbor genes necessary to synthesize biodegradable plastics known as polyhydroxyalkanoates (PHAs). We surveyed a genomic database and discovered a new cluster of class IV PHA synthase genes (*phaRC*). These genes are different in sequence and operon structure from any previously reported PHA synthase. The newly discovered PhaRC synthase was demonstrated to produce PHAs in recombinant *Escherichia coli*.