PREFIX np: <http://www.nanopub.org/nschema#>
PREFIX rso: <http://rdf.biosemantics.org/ontologies/referencesequence#>
PREFIX so: <http://purl.org/obo/owl/SO#>
PREFIX ff: <http://purl.obolibrary.org/obo/>
PREFIX entGene: <http://linkedlifedata.com/resource/entrezgene/>
PREFIX lldRel: <http://linkedlifedata.com/resource/relationontology/>
PREFIX uniprot: <http://purl.uniprot.org/taxonomy/>

  # FANTOM5 Ontology
  SERVICE <http://agraph.biosemantics.org/catalogs/rajatest/repositories/fantom5-ontology> {
    # CL_0000188 = skeletal muscle cell
    ?cellType rdfs:subClassOf* ff:CL_0000188.
  }

  # Linked Life Data
  {  
    lldRel:expressedInOrganism uniprot:9606;
    entGene:hasGeneId ?geneID .
  }

  # Convert ?geneID to Bio2RDF gene resource URI

  # FANTOM5 Nanopublications
  SERVICE <http://fantom5.nanopub.org/fantom5/sparql> {
    graph ?rikenAssertion2 {  
      # Type 2 Nanopublications
    }  
    
    graph ?rikenAssertion1 {  
      # Type 1 Nanopublications  
      ?cageCluster rso:mapsTo ?cageClusterRegion.
      ?cageClusterRegion rso:start ?cageStart;
      rso:end ?cageEnd;
    }  
    
    graph ?rikenAssertion3 {  
      # Type 3 Nanopublications
      ?cageCluster so:associated_with ?measurementValues;
      rso:observed_in ?cellType.
      ?measurementValues ff:IAO_0000004 ?tpmValue.
      FILTER (?tpmValue >= 0)
    }  
  }  
} order by desc (?cageStart)