

Table S1. Crystallin amino acid sequences

1

Class	Species Name	Crystallin	GenBank Accession No.
<i>Mollusca</i>			
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	Alpha-crystallin A chain-like isoform X1	XP_014783063.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	Alpha-crystallin A chain-like isoform X2	XP_014783064.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	Alpha-crystallin A chain-like	XP_014767687.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	Alpha-crystallin A chain isoform X1	XP_029654771.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	Alpha-crystallin A chain-like	XP_029643927.2
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	Crystallin J1A-like	XP_014782921.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	Crystallin J1A-like	XP_014782922.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	Crystallin J1A	XP_036358994.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	Lambda-crystallin isoform X1	XP_029654653.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	Lambda-crystallin isoform X2	XP_036356167.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	Lambda-crystallin isoform X3	XP_036356168.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	Lambda-crystallin-like	XP_014776757.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	Ketimine reductase mu-crystallin-like isoform X1	XP_014772027.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	Ketimine reductase mu-crystallin-like isoform X2	XP_014772028.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	Ketimine reductase mu-crystallin isoform X1	XP_029637902.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	Ketimine reductase mu-crystallin isoform X2	XP_036359829.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	Omega-crystallin	XP_014771974.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	Omega-crystallin	XP_029643562.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 3 isoform X1	XP_014771126.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 3 isoform X2	XP_014771127.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 3	XP_014771121.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 4-like isoform X1	XP_014781641.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 4-like isoform X2	XP_014781642.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin SL11-like	XP_014789914.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin SL11-like	XP_014789700.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 2-like	XP_014783449.1

Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 2-like	XP_014783448.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 3-like	XP_014781640.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 4-like	XP_014772690.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 4-like	XP_014771131.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 4-like	XP_014771130.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 3-like	XP_014771129.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 3-like	XP_014771128.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin SL20-1-like	XP_014771123.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 2	XP_014771122.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 4-like	XP_014771120.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 4-like	XP_014771119.1
Cephalopoda	<i>Octopus bimaculoides</i> (Pickford and McConnaughey, 1949)	S-crystallin 3-like	XP_014771118.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 2-like	XP_036355061.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 4-like	XP_029655537.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 4-like	XP_029637189.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 4-like	XP_029637083.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 3-like	XP_029636900.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin SL18	XP_029636899.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 3-like	XP_036359020.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 2-like	XP_036358738.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 4-like	XP_036358740.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 3-like	XP_029636684.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin SL11-like	XP_029636658.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 3-like	XP_029636639.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 3	XP_029636623.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 1	XP_029636579.2
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 3-like	XP_029636572.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 3-like	XP_029636557.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin SL20-1-like	XP_036358739.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 4	XP_029636540.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	S-crystallin 3	XP_036358741.1
Cephalopoda	<i>Octopus sinensis</i> (Cuvier, 1797)	Zeta-crystallin-like	XP_036356064.1
Bivalvia	<i>Pecten maximus</i> (Linnaeus, 1758)	Alpha-crystallin A chain-like	XP_033752285.1
Bivalvia	<i>Pecten maximus</i> (Linnaeus, 1758)	Alpha-crystallin A chain-like	XP_033731729.1
Bivalvia	<i>Pecten maximus</i> (Linnaeus, 1758)	Alpha-crystallin B chain-like	XP_033730743.1
Bivalvia	<i>Pecten maximus</i> (Linnaeus, 1758)	Beta-crystallin A3-like	XP_033724714.1
Bivalvia	<i>Pecten maximus</i> (Linnaeus, 1758)	Crystallin J1A-like isoform X1	XP_033743114.1
Bivalvia	<i>Pecten maximus</i> (Linnaeus, 1758)	Crystallin J1A-like isoform X2	XP_033743115.1
Bivalvia	<i>Pecten maximus</i> (Linnaeus, 1758)	Crystallin J1A-like	XP_033731119.1

<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	Lambda-crystallin homolog isoform X1	XP_033739698.1
<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	Lambda-crystallin homolog isoform X2	XP_033739699.1
<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	Lambda-crystallin homolog	XP_033759109.1
<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	Lambda-crystallin-like	XP_033739696.1
<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	Ketimine reductase mu-crystallin-like	XP_033746700.1
<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	S-crystallin SL11-like isoform X1	XP_033746347.1
<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	S-crystallin SL11-like isoform X2	XP_033746348.1
<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	S-crystallin SL11-like isoform X3	XP_033746349.1
<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	S-crystallin SL11-like	XP_033755358.1
<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	S-crystallin SL11-like	XP_033754085.1
<i>Bivalvia</i>	<i>Pecten maximus</i> (Linnaeus, 1758)	S-crystallin SL11-like	XP_033746352.1
<i>Bivalvia</i>	<i>Placopecten magellanicus</i> (Gmelin, 1791)	Omega-crystallin	AF175578.2:132-1610
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Alpha-crystallin B chain	XP_005103900.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Alpha-crystallin B chain-like	XP_013092927.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Alpha-crystallin B chain-like	XP_013086097.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Alpha-crystallin B chain-like	XP_013076883.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Alpha-crystallin B chain-like	XP_013069953.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Alpha-crystallin B chain-like	XP_013069914.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Alpha-crystallin B chain-like	XP_013069912.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Alpha-crystallin B chain-like isoform X1	XP_025099030.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Alpha-crystallin B chain-like isoform X2	XP_025099031.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Alpha-crystallin B chain-like isoform X3	XP_025099032.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Alpha-crystallin B chain-like	XP_025098812.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Alpha-crystallin A chain-like	XP_025099080.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Alpha-crystallin A chain-like	XP_025098296.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Alpha-crystallin B chain-like	XP_025096925.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Alpha-crystallin A chain-like	XP_025088243.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Crystallin J1A	XP_005092833.2
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Crystallin J1C	XP_005092832.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Crystallin J1A-like	XP_013065813.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Crystallin J1A-like	XP_013065454.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Crystallin J1A-like	XP_025112670.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Lambda-crystallin homolog	XP_005112621.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Lambda-crystallin homolog	XP_035829394.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Lambda-crystallin homolog	XP_012945982.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Lambda-crystallin homolog	XP_005112622.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Lambda-crystallin isoform X1	XP_035828580.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Lambda-crystallin homolog isoform X2	XP_005109678.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Lambda-crystallin	XP_012944178.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Lambda-crystallin homolog	XP_013089433.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Lambda-crystallin homolog	XP_013078590.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Lambda-crystallin-like	XP_025099022.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Lambda-crystallin homolog	XP_025097213.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Lambda-crystallin homolog	XP_025080092.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	Ketimine reductase mu-crystallin	XP_005092454.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Ketimine reductase mu-crystallin-like	XP_013069822.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Ketimine reductase mu-crystallin-like isoform X1	XP_025084683.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	Ketimine reductase mu-crystallin-like isoform X2	XP_025084684.1

<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	S-crystallin SL11 isoform X1	XP_012945525.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	S-crystallin SL11 isoform X2	XP_012945526.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	S-crystallin SL11	XP_005090422.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	S-crystallin SL11	XP_005095055.2
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	S-crystallin SL11-like	XP_012942559.1
<i>Gastropoda</i>	<i>Aplysia californica</i> (J. G. Cooper, 1863)	S-crystallin SL11-like	XP_035827848.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	S-crystallin SL20-1-like	XP_013071556.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	S-crystallin SL11-like	XP_013066599.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	S-crystallin SL11-like	XP_013065224.1
<i>Gastropoda</i>	<i>Pomacea canaliculata</i> (Lamarck, 1819)	S-crystallin 4-like	XP_025108100.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Zeta-crystallin-like	XP_013095407.1
<i>Gastropoda</i>	<i>Biomphalaria glabrata</i> (Say, 1818)	Zeta-crystallin-like, partial	XP_013081536.1
Vertebrata			
<i>Actinopterygii</i>	<i>Danio rerio</i> (Hamilton, 1822)	Alpha-crystallin A chain	NP_694482.1
<i>Actinopterygii</i>	<i>Danio rerio</i> (Hamilton, 1822)	Crystallin, alpha B, a	NP_571232.1
<i>Actinopterygii</i>	<i>Danio rerio</i> (Hamilton, 1822)	Crystallin, alpha B, b	NP_001002670.1
<i>Actinopterygii</i>	<i>Danio rerio</i> (Hamilton, 1822)	Selenoprotein J	NP_001180398.1
<i>Actinopterygii</i>	<i>Danio rerio</i> (Hamilton, 1822)	Crystallin, gamma S1	NP_001013294.1
<i>Actinopterygii</i>	<i>Danio rerio</i> (Hamilton, 1822)	Crystallin, gamma MX	NP_001013280.1
<i>Actinopterygii</i>	<i>Danio rerio</i> (Hamilton, 1822)	Crystallin, gamma M2c	NP_001007784.1
<i>Actinopterygii</i>	<i>Danio rerio</i> (Hamilton, 1822)	Gamma-crystallin N-A	NP_001007785.1
<i>Actinopterygii</i>	<i>Danio rerio</i> (Hamilton, 1822)	Crystallin, gamma M1	NP_001007786.1
Cnidaria			
<i>Cubozoa</i>	<i>Tripedalia cystophora</i> (Conant, 1897)	J1A crystallin	AAA30106.1
<i>Cubozoa</i>	<i>Tripedalia cystophora</i> (Conant, 1897)	J1B crystallin	AAA30107.1
<i>Cubozoa</i>	<i>Tripedalia cystophora</i> (Conant, 1897)	J1C crystallin	AAA30108.1
<i>Cubozoa</i>	<i>Tripedalia cystophora</i> (Conant, 1897)	J2 crystallin	ABQ12778.1