

Mammalian and Marsupial Protamine P1 Sequences

Primates

Human (*Homo sapien*)
 Lar Gibbon (*Hyalobates Lar*)
 Chimpanzee (*Pan troglodytes*)
 Gorilla (*Gorilla gorilla*)
 Bornean orangutan (*Pongo pygmaeus*)
 Sumatran orangutan (*Pongo abelii*)
 Olive baboon (*Papio anubis*)
 Yellow baboon (*Papio cynocephalus*)
 Rhesus macaque (*Rhesus macaque*)
 Crab eating macaque (*Macaca fascicularis*)
 Bonobo (*Pan paniscus*)
 Silvered leaf monkey (*Trachypithecus cristatus*)
 Francois' langur (*Trachypithecus francoisi*)
 Golden langur (*Trachypithecus geei*)
 Indochinese lutung (*Trachypithecus germaini*)
 Nilgiri langur (*Trachypithecus johnii*)
 Dusky Leaf Monkey (*Trachypithecus obscurus*)
 Phayre's langur (*Trachypithecus phayrei*)
 Capped langur (*Trachypithecus pileatus*)
 Purple-faced langur (*Trachypithecus velutinus*)
 Northern plains gray langur (*Semnopithecus entellus*)
 Marmoset (*Callithrix jacchus*)
 Western red colobus (*Piliocolobus badius*)
 Green monkey (*Chlorocebus sabaeus*)
 Emperor tamarin (*Saguinus imperator*)
 Brown spider monkey (*Atelus hybodus*)
 Northern greater galago (*Otolemur garnettii*)
 Squirrel monkey (*Saimiri sciureus*)
 Mantled guereza (*Colobus guereza*)
 Venezuelan red howler monkey (*Alouatta seniculus*)
 Malayan flying lemur (*Galeopterus variegatus*)
 Proboscis monkey (*Nasalis larvatus*)
 Ma's night monkey (*Aotus nancymaae*)

Proboscids

African bush elephant (*Loxodonta africana*)
 Asian elephant (*Elephas maximus*)

Artiodactyles

Pygmy hippopotamus (*Hippopotamus liberianus*)
 Common hippopotamus (*Hippopotamus amphibius*)
 Eurasian wild pig (*Sus scrofa*)
 Red river hog (*Potamochoerus porcus*)
 Musk deer (*Moschus sp.*)
 Tufted deer (*Elaphodus cephalophorus*)
 White-tailed deer (*Odocoileus virginianus*)
 Moose (*Alces alces*)
 Elk/Red deer (*Cervus elaphus*)
 Ariel gazelle (*Gazella dorcas*)
 Arabian camel (*Camelus dromidarius*)
 Pronghorn (*Antilocapra americana*)
 Domestic sheep (*Ovis aries*)
 Thinhorn sheep (*Ovis dalli*)
 Domestic goat (*Capra hircus*)
 Domestic bull (*Bos taurus*)
 Zebu (*Bos indicus*)

Perissodactyls

African wild ass (*Equus africanus*)
 Horse (*Equus caballus*)
 Grey's zebra (*Equus grevyi*)
 Common zebra (*Equus quagga boehmi*)
 Przewalski's horse (*Equus ferus przewalskii*)

Carnivores

Domestic dog (*Canis lupus familiaris*)
 Domestic cat (*Felis catus*)
 American black bear (*Ursus americanus*)

Lagomorphs

New Zealand rabbit (*Oryctolagus cuniculus*)

Cetaceans

Pigmy Right whale (*Caperea marginata*)
 Bowhead whale (*Balaena mysticetus*)
 Southern Right whale (*Eubalaena australis*)
 Black Right whale (*Eubalaena glacialis*)
 North Atlantic Right whale (*Eubalaena japonica*)
 Baird's beaked whale (*Berardius bairdii*)
 Shepherd's beaked whale (*Tasmacetus shepherdii*)
 Sowerby's beaked whale (*Mesoplodon bidens*)
 Gray's beaked whale (*Mesoplodon grayi*)
 Lesser beaked whale (*Mesoplodon peruviana*)
 Humpback whale (*Megaptera novaeangliae*)
 Minke whale (*Balaenoptera acutorostrata*)
 Antarctic minke whale (*Balaenoptera bonaerensis*)
 Sei whale (*Balaenoptera borealis*)
 Bryde's whale (*Balaenoptera edeni*)
 Blue whale (*Balaenoptera musculus*)
 Fin whale (*Balaenoptera physalus*)
 Cuvier's beaked whale (*Ziphis cavirostris*)
 Gray whale (*Eschrichtius robustus*)
 Sperm whale (*Physeter catodon*)
 Dwarf sperm whale (*Kogia sima*)
 Pygmy sperm whale (*Kogia breviceps*)
 Narwhale (*Monodon monoceros*)
 Beluga whale (*Delphinapterus leucas*)
 Killer whale (*Orcinus orca*)
 Melon headed whale (*Peponocephala electra*)
 False killer whale (*Pseudorca crassidens*)
 Pygmy killer whale (*Feresa attenuata*)
 Short-finned pilot whale (*Globicephala macrocephalus*)

Primates		Mammalian and Marsupial Protamine P1 Sequences											
Human (<i>Homo sapien</i>)		A	R	Y	R	C	C	S	R	S	R	Y	R
Lar Gibbon (<i>Hyalobates Lar</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Chimpanzee (<i>Pan troglodytes</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Gorilla (<i>Gorilla gorilla</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Bornean orangutan (<i>Pongo pygmaeus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Sumatran orangutan (<i>Pongo abelii</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Olive baboon (<i>Papio anubis</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Yellow baboon (<i>Papio cynocephalus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Rhesus macaque (<i>Rhesus macaque</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Crab eating macaque (<i>Macaca fascicularis</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Bonobo (<i>Pan paniscus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Silvered leaf monkey (<i>Trachypithecus cristatus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Francois' langur (<i>Trachypithecus francoisi</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Golden langur (<i>Trachypithecus geei</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Indochinese lutung (<i>Trachypithecus germaini</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Nilgiri langur (<i>Trachypithecus johnii</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Dusky Leaf Monkey (<i>Trachypithecus obscurus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Phayre's langur (<i>Trachypithecus phayrei</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Capped langur (<i>Trachypithecus pileatus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Purple-faced langur (<i>Trachypithecus velutinus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Northern plains gray langur (<i>Semnopithecus entellus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Marmoset (<i>Callithrix jacchus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Western red colobus (<i>Piliocolobus badius</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Green monkey (<i>Chlorocebus sabaeus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Emperor tamarin (<i>Saguinus imperator</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Brown spider monkey (<i>Atelus hybodus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Northern greater galago (<i>Otolemur garnettii</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Squirrel monkey (<i>Saimiri sciureus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Mantled guereza (<i>Colobus guereza</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Venezuelan red howler monkey (<i>Alouatta seniculus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Malayan flying lemur (<i>Galeopterus variegatus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Proboscis monkey (<i>Nasalis larvatus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Ma's night monkey (<i>Aotus nancymaae</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Proboscids		Mammalian and Marsupial Protamine P1 Sequences											
African bush elephant (<i>Loxodonta africana</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Asian elephant (<i>Elephas maximus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Artiodactyles		Mammalian and Marsupial Protamine P1 Sequences											
Pygmy hippopotamus (<i>Hippopotamus liberianus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Common hippopotamus (<i>Hippopotamus amphibius</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Eurasian wild pig (<i>Sus scrofa</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Red river hog (<i>Potamochoerus porcus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Musk deer (<i>Moschus sp.</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Tufted deer (<i>Elaphodus cephalophorus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
White-tailed deer (<i>Odocoileus virginianus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Moose (<i>Alces alces</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Elk/Red deer (<i>Cervus elaphus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Ariel gazelle (<i>Gazella dorcas</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Arabian camel (<i>Camelus dromidarius</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Pronghorn (<i>Antilocapra americana</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Domestic sheep (<i>Ovis aries</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Thinhorn sheep (<i>Ovis dalli</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Domestic goat (<i>Capra hircus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Domestic bull (<i>Bos taurus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Zebu (<i>Bos indicus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Perissodactyls		Mammalian and Marsupial Protamine P1 Sequences											
African wild ass (<i>Equus africanus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Horse (<i>Equus caballus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Grey's zebra (<i>Equus grevyi</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Common zebra (<i>Equus quagga boehmi</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Przewalski's horse (<i>Equus ferus przewalskii</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Carnivores		Mammalian and Marsupial Protamine P1 Sequences											
African wild ass (<i>Equus africanus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Horse (<i>Equus caballus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Grey's zebra (<i>Equus grevyi</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Common zebra (<i>Equus quagga boehmi</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Przewalski's horse (<i>Equus ferus przewalskii</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Perissodactyls		Mammalian and Marsupial Protamine P1 Sequences											
African wild ass (<i>Equus africanus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Horse (<i>Equus caballus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Grey's zebra (<i>Equus grevyi</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Common zebra (<i>Equus quagga boehmi</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Przewalski's horse (<i>Equus ferus przewalskii</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Carnivores		Mammalian and Marsupial Protamine P1 Sequences											
Domestic dog (<i>Canis lupus familiaris</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Domestic cat (<i>Felis catus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
American black bear (<i>Ursus americanus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Lagomorphs		Mammalian and Marsupial Protamine P1 Sequences											
New Zealand rabbit (<i>Oryctolagus cuniculus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Cetaceans		Mammalian and Marsupial Protamine P1 Sequences											
Pigmy Right whale (<i>Caperea marginata</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Bowhead whale (<i>Balaena mysticetus</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Southern Right whale (<i>Eubalaena australis</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Black Right whale (<i>Eubalaena glacialis</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
North Atlantic Right whale (<i>Eubalaena japonica</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Baird's beaked whale (<i>Berardius bairdii</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Shepherd's beaked whale (<i>Tasmacetus shepherdii</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Sowerby's beaked whale (<i>Mesoplodon bidens</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Gray's beaked whale (<i>Mesoplodon grayi</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Lesser beaked whale (<i>Mesoplodon peruviana</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Humpback whale (<i>Megaptera novaeangliae</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Minke whale (<i>Balaenoptera acutorostrata</i>)		A	R	Y	R	C	C	S	R	S	R	C	R
Antarctic minke whale (<i>Balaenoptera bonaerensis</i>)		A	R	Y	R	C	C</td						

Bats

Small flying fox (<i>Pteropus hypomelanus</i>)	ARY	RC	RSQ	- S R S R C R R R - - R R R C R R R R R RCC R R R - - - R - V C C - R R Y T V R C R R R - - -
Ghost-faced bat (<i>Mormoops megalophylla</i>)	ARY	RC	CRSP	- S R S R C R R R - - R R R C R R R R R S C R R R - - - R - V C C - R R Y T V R C R R R - - -
Parnells mustached bat (<i>Perotorus parnelli</i>)	ARY	RC	CRSP	- S R S R C R R R - - R R R C R R R R R RCC R R R - - - R - V C C - R R Y T V R C R R R - - -
Leach's single leaf bat (<i>Monophyllus redmani</i>)	ARY	RC	CRSP	- S R S R C R R R - - R R R C R R R R R RCC R R R - - - R - V C C - R R Y T V R C R R R - - -
Common vampire bat (<i>Desmodus rotundus</i>)	ARY	RC	CRSP	- S R S R C R R R - - R R R C R R R R R RCC R R R - - - R - V C C - R R Y T V R C R R R - - -
Lesser mouse-tailed bat (<i>Rhinopoma hardwickii</i>)	ARY	RC	CRSR	- S R S R C R P R - - R R R C R R R R R RCC R R R - - - R - V C C - R R Y S A R C R R R - - -
Cuban funnel-eared bat (<i>Chilonatalus micropus</i>)	ARY	RG	RSQ	- S R S R C R R - - R R R C R T R R RCC R R R - - - RR - - - - - V C C R R Y T V V R C R R R - - -
Greater horseshoe bat (<i>Rhinolophus ferrumequinum</i>)	ARY	SC	CRSH	- S R S R S R R R - - R Q R C R R R R R S C G R R R - - - A - C Y R R Y T V R Y R R R R R R R - - -
Brown Big-eared bat (<i>Plecotus auritus</i>)	ARY	RC	RSQ	- S R S R C R R R - - R R R C Y R R R R RCC R R R R R - - - RV C C R R Y T - V V R C R R R - - -
Commerson's leaf-nosed bat (<i>Hipposideros commersoni</i>)	ARY	RC	CRSH	- S R S R C R R R - - R R R S R R R R R S C G R R R - - - A - G Y R R Y T V R Y R R R R R - - -
Townsend's big-eared bat (<i>Coronyrhinus townsendii</i>)	ARY	RC	RSQ	- S R S R C R R R - - R R R C Y R R R R RCC R R R R R - - - RV C C R R Y T - R Y R R R - - -
Mexican funnel-eared bat (<i>Natalus stramineus</i>)	ARY	RC	RSRCP	- S R S R C R P - - R R R C R T R R RCC R R R - - - RR - - - - - V C C R R Y T V V R C R R R - - -
Beatrix's bat (<i>Glaucostycteris beatrix</i>)	ARY	RC	CRSR	- - S R C R R - - R R R S Y R R R R RCC R R R - - - RR - - - - - V C C R R Y V R C R R - - R -
Daubenton's bat (<i>Myotis daubentonii</i>)	ARY	RC	CRSR	- - S R C R R - - R R R C Y R R R R RCC R R R R R - - - RR - - - - - V C C R R Y S R C R R R - - -
Little brown bat (<i>Myotis lucifugus</i>)	ARY	RC	CRSR	- - S R C R R - - R R R C Y R R R R RCC R R R R R - - - RR - - - - - V C C R R Y S R C R R R - - -
Brazilian brown bat (<i>Eptesicus brasiliensis</i>)	ARY	RC	CRSR	- - S R C R R - - R R R C Y R R R R RCC R R R R R - - - RRV C C R R Y T V I - R C R R R - - -
Big brown bat (<i>Eptesicus fuscus</i>)	ARY	RC	CRSR	- - S R C R R - - R R R C Y R R R R RCC R R R R R - - - RRV C C R R Y T V I - R C R R R - - -
Desert long-eared bat (<i>Otonycteris hemprichii</i>)	ARY	RC	CRSR	- - S R C R R - - R R R C Y R R R R RCC R R R R R - - - RRV C C R R Y T V I - R C R R R - - -
Dark-brown pipistrelle bat (<i>Neoromicia brunneus</i>)	ARY	RC	CRSR	- - S R C R R - - R R K C Y R R R R R C S R K R R R - - - R V C C R R Y T - V M R C R R R - - -
Savi's pipistrelle bat (<i>Hypsugo savii</i>)	ARY	RR	CRSR	- S R - C R - - R R R R R C H R R R R RCC R R R R R - - - R R A C C R R Y R C R - R R - - -
Round-eared tube-nosed bat (<i>Murina cyclotis</i>)	ARY	RG	CRSR	- S R - C R - - R R R R R C H R R R R RCC R R R R R - - - R R A C C R R Y R C R - R R - - -

Rodents

Steppe mouse (<i>Mus spicilegus</i>)	ARY RC C RSK -	S RS R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R S Y T I R C K K Y -
Field vole (<i>Microtus agrestis</i>)	ARY R - - C R S K -	S R S R C S R G - -	R R R C R R R R R C C R R R R - -	R C Y R R R S C T M R C K R Y -
Common vole (<i>Microtus arvalis</i>)	ARY R - - Y R S K -	S R S R C S R G - -	R R R C R R R R R C C R R R R - -	R C Y R R R S T Y T M R C K R Y -
Cabrera's vole (<i>Microtus cabrerae</i>)	ARY R - - Y R S K -	S R S R C S R G - -	R R R C R R R R R C C Q S R K R -	R C C R R R R T Y T V R C K R Y -
Gerbe's vole (<i>Microtus gerbeli</i>)	ARY R - - C R S K -	S R S R C S R G - -	R R R C R R R R R C C R R R R - -	R C Y R R R S Y T M R C K R Y -
Lusitanian pine vole (<i>Pitymys lusitanicus</i>)	ARY R - - C R S K -	S R S R C S R G - -	R R R C R R R R R C C R R R R - -	R C Y R R R S Y T M R C K R Y -
Mediterranean pine vole (<i>Pitymys duodecimcostatus</i>)	ARY R - - C R S K -	S R S R C S R H - -	R R R C R R R R R C C R R R R - -	R C Y R R R S Y T M R C K R Y -
Cairo spiny mouse (<i>Acomys cahirinus</i>)	ARY RC C RSK -	S R S R C S R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R - Y T L R C I R I -
Asia minor spiny mouse (<i>Acomys cisticus</i>)	ARY RC C RSK -	S R S R C S R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R - Y T L R C I R I -
European snow vole (<i>Chionomys nivalis</i>)	ARY R - - C R S Q -	S R S R C S R R - -	R R R C R R R R R C C R R R R - -	R C Y R R R - T Y T L R C K R Y -
Campbell's dwarf hamster (<i>Phodopus campbelli</i>)	ARY R - - C R S Q -	S R S R C S R R - -	R R R C R R R R R C C R R R R - -	R C Y G R R R T Y T L R C K R Y -
Roborovski hamster (<i>Phodopus roborovski</i>)	ARY RC C RSK -	S R S R C S R R - -	R R R C R S R R R C C R R R R R - -	R C C R R R R - Y T L R C K R Y -
Djungarian hamster (<i>Phodopus sungorus</i>)	ARY RG C RSK -	S R S R C S R R - -	R R R C R S R R R C C R R R R R - -	R C C R R R R - Y S L R C K R Y -
Southern water vole (<i>Arvicola sapidus</i>)	ARY R - - C R S K -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C Y R R R T Y T M R C K R Y -
European water vole (<i>Arvicola terrestris</i>)	ARY R - - C R S K -	S R S R C R H R - -	R R R C R R R R R C C R R R R - -	R C Y R R R T Y T L R C K R Y -
Chinese hamster (<i>Cricetulus griseus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C Y R R R T Y T L R C K R Y -
Eurasian harvest mouse (<i>Microtomysh minutus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R T Y T L R C K R Y -
Syrian hamster (<i>Mesocricetus auratus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R T Y T L R C K R Y -
Mongolian gerbil (<i>Meriones unguiculatus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R T Y T L R C K R Y -
California mouse (<i>Peromyscus californicus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R - Y T L R C K R Y -
White-footed mouse (<i>Peromyscus leucopus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R - Y T L R C K R Y -
North American deer mouse (<i>Peromyscus maniculatus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R - Y T L R C K R Y -
Oldfield mouse (<i>Peromyscus polionotus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R - Y T L R C K R Y -
Long-tailed field mouse (<i>Apodemus sylvaticus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R - Y T L R C K R Y -
European hedgehog (<i>Erinaceus europaeus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R - Y T L R C K R Y -
Guinea pig (<i>Cavia porcellus</i>)	ARY RC C RSP -	S R S R C R R R - -	R R R F Y R R R R R C C R R R R - -	G C C R R R Y T R - - R C K R Y -
Hipid cotton rat (<i>Sigmodon hispidus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R T Y T L R C K K Y -
Norwegian rat (<i>Rattus norvegicus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R S Y T I R C K K Y -
Southwestern Asian mouse (<i>Mus musculus bactrianus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R S Y T I R C K K Y -
Southeastern Asian mouse (<i>Mus musculus castaneus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R S Y T I R C K K Y -
House mouse (<i>Mus musculus domesticus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R S Y T I R C K K Y -
House mouse (<i>Mus musculus musculus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R S Y T I R C K K Y -
Servant mouse (<i>Mus famulus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C Q R R R - -	R C C R R R R S Y T I R C K K Y -
Gairdner's shrew mouse (<i>Mus pahari</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C Q R R R Q - -	R C C R R R R S Y T I R C K K Y -
Balkan short-tailed mouse (<i>Mus macedonicus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C Q R R R Q - -	R C C R R R R S Y T I R C K K Y -
Algerian mouse (<i>Mus spretus</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R S Y T I R C K K Y -
Cook's mouse (<i>Mus cookii</i>)	ARY RC C RSK -	S R S R C R R R - -	R R R C R R R R R C C R R R R - -	R C C R R R R S Y T I R C K K Y -
Spiry rat (<i>Tokudaia mueninki</i>)	ARY QC C H R R R - -	- - - - -	- - R R S R R Q R R R C C Q Q R Q - -	R C C C Y R I S Y T L R C K I L D V Q F S K S I K T P A

Marsupials

Tate's shrew opossum (<i>Caenolestes fuliginosus</i>)	A R Y R H - S R S R - -	S R S R Y R R R R R R R R S R Y R S R R R R Y R R S R R R R - - - - - R R G R - R G Y S - - - - - R R Y S R R R R R Y -
Rufous rat kangaroo (<i>Aepyprymnus rufescens</i>)	A R Y R H - S R S R - -	S R S R Y R R R R - - R R S R Y R S R R R R Y R G S R R R R - R S R R R R R R G Y S - - - R R Y S R - - - R R R R Y -
Brushtail possum (<i>Trichosurus vulpecula</i>)	A R Y R H - S R S R - -	S R S R Y R R R R R R R R S R Y R S R R R R Y R R S R R R R - - R R G R R R R G Y S - - - R R Y S R R G R R Y -
Gray short-tailed opossum (<i>Monodelphis domestica</i>)	A R Y R R S R S R - -	S R S R Y G R R R R R S R S R R R R S R R - - - - - R R R R G R G R G Y H - - R R S P H R R R R R R R R - - -
Virginia opossum (<i>Didelphis virginiana</i>)	A R Y R R S R S R - -	S R S R Y G R R R R R S R S R R R R S R R - - - - - R R R R G R G R G Y H - - R R S P H R R R R R R R R - - -
Red-legged pademelon (<i>Thylagoles stigmatica</i>)	A R Y R H - S R S R - -	S R S R Y R R R R - R R S R Y R S R R R R Y R G R R R R - S R R G R R R G Y S - C R Y S R - - - R R R R Y -
Red kangaroo (<i>Macropus rufus</i>)	A R Y R H - S R S R - -	S R S R Y R R R R - R R R S R Y R S Q R R R Y R G R R R R - S - R R G R R R G Y S - R R Y S R - - - R R R R Y -
Quokka (<i>Setonix brachyurus</i>)	A R Y R H - S R S R - -	S R S R Y R R R R - R R R S R Y R S R R R R Y R G R R R R - S R R G R - R G Y S - - R R Y S R - - - R R R R Y -
Nail tail wallaby (<i>Onychogalea unguifera</i>)	A R Y R H - S R S R - -	S R S R Y R R R R - R R R S R Y R S R R R R S R G R R R R - S R R G R - R G Y S - - R R Y S R - - - R R R R Y -
Agile wallaby (<i>Macropus agilis</i>)	A R Y R H - S R S R - -	S R S R Y R R R R - R R R S R Y R S R R R R S R G R R R R - S R R - G R R G Y S - - R R Y S R - - - R R R R Y -
Doria's tree kangaroo (<i>Dendrolagus dorianus</i>)	A R Y R H - S R S R - -	? R S R Y R R R R - R ? R S R Y R S ? R R Y R G R R R R - S R R G R R R R G Y S - - R ? R Y S R - - - R R R R Y -
Goodfellow's tree kangaroo (<i>Dendrolagus goodfellowi</i>)	A R Y R H - S R S R - -	S R S R Y R R R R - R R R S R Y R S R R R R Y R G R R R R - S R R G R - R G Y S - - R R Y S R - - - R R R R Y -
Banded hare wallaby (<i>Lagostrophus fasciatus</i>)	A R Y R H - S R S R - -	S R S R Y R R R R - R R R S R Y R S R R R R Y R G S R R S R - S R R R G R R R G Y S - - R R Y S R - - - R R R R Y -
Musky rat kangaroo (<i>Hypsiprymnodon moschatus</i>)	A R Y R H - S R S R - -	S R S R Y R R R R - R R R S R Y R G R R R R Y R R S R R R R S - R R G R R G Y Y R - - - R R Y S R R R R R R Y Y -
Tammar wallaby (<i>Macropus eugenii</i>)	A R Y R H - S R S R - -	S R S R Y R R R R - R R R S R Y R S R R R S R G R R R R - R S R R G R R R R G Y S - - R R Y S R - - - R R R R Y -

Red-necked wallaby (<i>Macropus rufogriseus</i>)	ARYRH-SRSR - SRSRYRRRR - RRRSRYRSRRRRYRGRRR - RSRRGRRRRRGYS - RRRYSR - RRRRY
Whiptail wallaby (<i>Macropus parryi</i>)	ARYRH-SRSR - SRSRYRRRR - RRRSRYRSRRRRYRGRRR?RSRRGRR - RGYS - RRRYSR - RRRRY
Rufous hare-wallaby (<i>Lagorchestes hirsutus</i>)	ARYRH-SRSR - SRSGYRQR - RRRSRYRSRRRRYRRQR - - RSRRGRRRRGYS - RRRYSRRYSSRRRRYY
Kultar (<i>Antechinus laniger</i>)	ARYRH-RHSR - SRSRYRRRR - RRRSRHNN - TYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Fawn antechinus (<i>Antechinus bellus</i>)	ARYRH-RHSR - SRSRYRRRR - RRRSRHNNRTTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Yellow-footed antechinus (<i>Antechinus flavipes</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Atherton antechinus (<i>Antechinus godmani</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Cinnamon antechinus (<i>Antechinus leo</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Swamp antechinus (<i>Antechinus minimus</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Long-nosed antechinus (<i>Antechinus naso</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Brown antechinus (<i>Antechinus stuartii</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Dusky antechinus (<i>Antechinus swainsonii</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Crest-tailed mulgara (<i>Dasyurus cristicauda</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Little red kaluta (<i>Dasykaluta rosamondae</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Kowari (<i>Dasyuroides byrnei</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Northern quoll (<i>Dasyurus hallucatus</i>)	ARYRH-RHSR - SRSRYRRRR - RSRGR - RRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Eastern quoll (<i>Dasyurus viverrinus</i>)	ARYRH-RHSR - SRSRYRRRR - RSRGR - RRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
New Guinean quoll (<i>Dasyurus albopunctatus</i>)	ARYRH-RHSR - SRSRYRRRR - RSRGR - RRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Western quoll (<i>Dasyurus geoffrooi</i>)	ARYRH-RHSR - SRSRYRRRR - RSRGR - RRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Bronze quoll (<i>Dasyurus spartacus</i>)	ARYRH-RHSR - SRSRYRRRR - RSRGR - RRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Tiger quoll (<i>Dasyurus maculatus</i>)	ARYRH-RHSR - SRSRYRRRR - RSRGR - RRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Habbenia dasyure (<i>Micromerixia habbema</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Black-tailed dasyure (<i>Murexchirus melanurus</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Short-furred dasyure (<i>Murexius longicaudata</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Three-striped dasyure (<i>Myoictis melas</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Wallace's dasyure (<i>Myoictis wallacei</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Speckled dasyure (<i>Neophascogale lorentzii</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Wongai ningau (<i>Ningau ridei</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Pilbara ningau (<i>Ningau tinealeyi</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Southern ningau (<i>Ningau yvonneae</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Broad-striped dasyure (<i>Paramurexia rothschildi</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Dibbler (<i>Parantechinus apicalis</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Red-tailed phascogale (<i>Phascogale calura</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Brush-tailed phascogale (<i>Phascogale tapoatafa</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Narrow-striped marsupial shrew (<i>Phascosorex dorsalis</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Common planigale (<i>Planigale maculata maculata</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Dwarf planigale (<i>Planigale maculata sinuata</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Paucident planigale (<i>Planigale gilesi</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRRGYS - RRRYSRRG - RRRY
Narrow-nosed planigale (<i>Planigale tenirostris</i>)	ARYRH-RHSR - SRSRNQCQRRR - RRR - YNRRTTYR - RSRRHSSRRRRGRRGCS - RRRYSRRG - RRRY
Sandstone false antechinus (<i>Pseudantechinus bilami</i>)	ARYRH-RHSR - SRSRNQCQRRR - RRR - YNRRTTYR - RSRRHSSRRRRVRRRGCS - RRRYSRRG - RRRY
Fat-tailed false antechinus (<i>Pseudantecheius macdonnellensis</i>)	ARYRH-RHSR - SRSRNQCQRRR - RRR - YNRRTTYR - RSRRHSSRRRRVRRRGCS - RRRYSRRG - RRRY
Ningbing false antechinus (<i>Pseudantecheius ningbing</i>)	ARYRH-RHSR - SRSRNQCQRRR - RRR - YNRRTTYR - RSRRHSSRRRRVRRRGCS - RRRYSRRG - RRRY
Woolley's false antechinus (<i>Pseudantecheius woolleyae</i>)	ARYRH-RHSR - SRSRNQCQRRR - RRR - YNRRTTYR - RSRRHSSRRRRVRRRGCS - RRRYSRRG - RRRY
Tasmanian devil (<i>Sarcophilus harrisii</i>)	ARCRRHISR - SRSRNQCQRRR - RSRHYNRRRTYR - RSRRHSSRRRRVRRRGCS - RR - CSRRR - RRRC
Grey-bellied Dunnart (<i>Sminthopsis griseoventer</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Kakadu dunnart (<i>Sminthopsis bindi</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Long-tailed dunnart (<i>Sminthopsis longicaudata</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Kangaroo Island dunnart (<i>Sminthopsis aitkeni</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Chestnut dunnart (<i>Sminthopsis archeri</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Fat-tailed dunnart (<i>Sminthopsis crassicaudata</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Little long-tailed dunnart (<i>Sminthopsis dolichura</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Julia Creek dunnart (<i>Sminthopsis douglasi</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Gilbert's dunnart (<i>Sminthopsis giberti</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
White-tailed dunnart (<i>Sminthopsis granulipes</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Hairy-footed dunnart (<i>Sminthopsis hirtipes</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
White-footed dunnart (<i>Sminthopsis leucopus</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Striped-faced dunnart (<i>Sminthopsis macroura</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Slender-tailed dunnart (<i>Sminthopsis murina</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Oldeola dunnart (<i>Sminthopsis oldeola</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Sandhill dunnart (<i>Sminthopsis psammophila</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Red-cheeked dunnart (<i>Sminthopsis virginiae</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Lesser hairy-footed dunnart (<i>Sminthopsis youngsoni</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Numbat (<i>Myrmecobius fasciatus</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Thylacine (<i>Thylacinus cynocephalus</i>)	ARYRH-RHSR - SRSRYRRRR - RSRHHNRRRTYR - RSRRHSSRRRRGRRGYS - RRRYSRRG - RRRY
Koala (<i>Phascolarctos cinereus</i>)	ARYRH-SRSR - SRSRYQRRR - RRRSRYRSQRRRYRGRSGRRRRGRRGYR - RRYSH - RR - RY
Southern marsupial mole (<i>Notoryctes typhlops</i>)	ARYRH-SRSR - SRSRYRRRR - RRRSRYRSQRRRYRGRSGRRRRGRRGYR - RRYSH - RR - RY
Coppery ringtail possum (<i>Pseudochirrops cupreus</i>)	ARYRH-SRSR - SRSRYRRRR - RRRSRYRSQRRRYRGRSGRRRRGRRGYR - RRYSH - RR - RY
Long-footed potoroo (<i>Potorous longipes</i>)	ARYRH-SRSR - SRSRYRRRR - RRRSRYRSQRRRYRGRSGRRRRGRRGYR - RRYSH - RR - RY
Eastern grey kangaroo (<i>Macropus giganteus</i>)	ARYRH-SRSR - SRSRYRRRR - RRRSRYRSQRRRYRGRSGRRRRGRRGYR - RRYSH - RR - RY
Brush-tailed bettong (<i>Bettongia penicillata</i>)	ARYRH-SRSR - SRSRYRRRR - RRRSRYRSQRRRYRGRSGRRRRGRRGYR - RRYSH - RR - RY
Swamp wallaby (<i>Wallabia bicolor</i>)	ARYRH-SRSR - SRSRYRRRR - RRRSRYRSQRRRYRGRSGRRRRGRRGYR - RRYSH - RR - RY
Dorcopsis (<i>Dorcopsis veterum</i>)	ARYRH-SRSR - SRSRYRRRR - RRRSRYRSQRRRYRGRSGRRRRGRRGYR - RRYSH - RR - RY
Small dorcopsis (<i>Dorcopsulus vanheurni</i>)	ARYRH-SRSR - SRSRYRRRR - RRRSRYRSQRRRYRGRSGRRRRGRRGYR - RRYSH - RR - RY
Bridled nail-tail wallaby (<i>Oryctolagus fraenata</i>)	ARYRH-SRSR - SRSNYRRRN - RRRSRYRSQRRRYRGRSGRRRRGRRGYR - RRYSH - RR - RY

Supplemental Figure S1. Amino acid sequences for all known mammalian protamine P1 proteins. The sequences have been aligned relative to human protamine P1, and the epitopic sequences recognized by the new anti-protamine MAbs are highlighted to identify those protamine P1's that are likely to be recognized. The sequences recognized by 2A11, 5A2, 5D1, and 11C1 are highlighted in blue (SRS), gray (RQR), purple (TRR) and brown (RCC). The sequences recognized by Mab 20D4 are highlighted green (ARY) and yellow (RSCRRRRRS, RSRRRRRRCR, and conserved variants). The YRP sequence recognized by Mab 26B11 is highlighted red. Only human P1 contains the YRP sequence, suggesting the Mab 26B11 will be human specific in its recognition of protamine P1. In contrast, the nearly universal presence of the ARY and/or RSCRRRRRS sequences suggest Mab 20D4 should recognize and bind to nearly every protamine P1 sequence except those of whales, dolphins and porpoises (cetaceans). MAbs 2A11, 5A2, 5D1, and 11C1 would also be expected to recognize and bind to the protamine P1's of most species of eutherian mammals and marsupials.