

variant mining™



Variant Mining™ is a Nobel Prize-winning method for directed protein evolution.

Variant Mining™ combines the top hits from a library to enable rapid discovery of highly active variants. This new sub-library can be assembled and delivered in pooled or arrayed format for your next round of evolution. You can continue to assay and combine hits as the feedstock for Variant Mining™ until you have found the highest level of fitness for your process relevant conditions. If you have not ordered the initial library from us, we are still happy to consult on whether it is appropriate for a variant mining workflow.

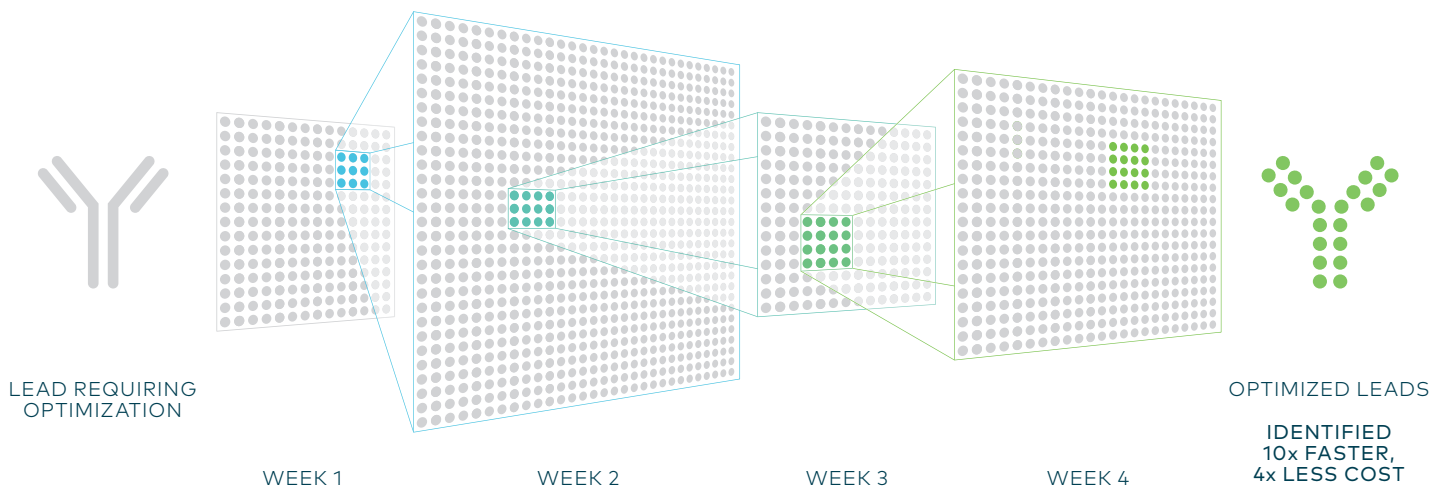
Combine with other DNA services from Neo to create a **Flexible Workflow**



A typical workflow might look like:



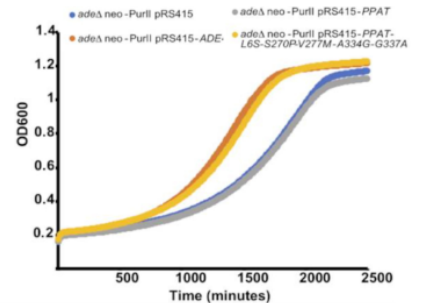
Variants are "mined" and iterative libraries are built from pre-existing stocks of oligos/parts:



Product Features

DESCRIPTION	ITERATIVE CAMPAIGNS TO GENERATE DIVERSITY FROM TOP HITS
DNA Starting Material	Store purified DNA or glycerol stocks at Neo for short periods of time (e.g. 1-2 months) to enable rapid re-order and scale-up of winners that show successful results in cell-based assays
Turnaround Time	Starting at 3 days
Sequence Verification	Sanger and/or NGS
Scale-Up	Mini, Midi, Maxi, and Gigaprep scale available
Cost	Project dependent, economies of scale achieved with more sequences/homology
Cloning Options	Sequences may be cloned into any customer-provided vector
Customization	Neo's PhD-level scientists will partner with you to determine custom "Flexible Workflows"
Deliverable	<ul style="list-style-type: none"> Delivered in pools or as individually arrayed variants 96/384 well plates or 1.5 ml tubes

Human residue #	6	56	57	58	63	84	99	187	221	224	250	270	277	293	308	312	334	337	423	446	448	449	450	451	474	480	482	483	487	496	500	501		
Human (Hsa)	L	S	S	V	S	V	K	L	E	T	V	S	V	M	Q	I	A	G	K	D	L	A	E	Y	K	E	K	H	I	C	S	G		
Camel (Cle)	S	N	W	M	T	T	N	I	G	S	V	P	M	I	Q	M	G	A	K	E	I	S	D	Y	I	V	K	Q	I	n	s	2	4	a
Hsa/Cle chimera 1	S	S	S	V	S	T	K	L	G	S	V	P	M	I	Q	M	G	A	K	E	I	S	D	Y	K	E	K	H	I	C	S	G		
Hsa/Cle chimera 2	S	S	S	V	S	T	N	L	G	S	V	P	M	I	Q	M	G	A	K	D	L	A	E	Y	K	E	K	H	I	C	S	G		
Hsa/Cle chimera 3	S	S	S	V	S	V	K	L	G	S	V	P	M	I	Q	M	G	A	K	D	L	A	E	Y	I	V	K	Q	I	n	s	2	4	a
Hsa/Cle chimera 4	S	S	S	V	S	T	N	L	G	S	V	P	M	M	Q	I	G	A	K	D	L	A	E	Y	K	E	K	H	I	C	S	G		
Hsa/Cle chimera 5	S	S	S	V	S	V	K	L	G	S	V	P	M	I	Q	M	G	A	K	E	I	S	D	Y	I	V	K	Q	I	n	s	2	4	a
Hsa/Cle chimera 6	S	S	S	V	S	V	K	L	G	S	V	P	M	I	Q	M	G	A	K	D	L	A	E	Y	K	E	K	H	I	C	S	G		
Hsa/Cle chimera 7	S	S	S	V	S	V	N	I	G	S	V	P	M	M	Q	M	G	A	K	D	L	A	E	Y	K	E	K	H	I	C	S	G		
Hsa/Cle chimera 8	S	S	S	V	S	V	N	L	E	T	V	P	M	I	Q	M	G	A	K	D	L	A	E	Y	I	V	K	Q	I	n	s	2	4	a
Hsa/Cle chimera 9	S	S	S	V	S	T	N	L	G	S	V	P	M	M	Q	I	G	A	K	E	I	S	D	Y	K	E	K	H	I	C	N	D		
Hsa/Cle chimera 10	S	S	S	V	S	T	N	I	G	T	V	P	M	M	Q	I	G	A	K	D	L	A	E	Y	K	E	K	H	I	C	S	G		
Hsa/Cle chimera 11	S	S	S	V	S	T	N	I	G	T	V	P	M	I	Q	M	G	A	K	E	I	S	D	Y	K	E	K	H	I	C	S	G		
Hsa/Cle chimera 12	S	S	S	V	S	T	N	L	G	T	V	P	M	M	Q	M	G	A	K	D	L	A	E	Y	K	E	K	H	I	C	S	G		
Camel (Cle)	S	N	W	M	T	T	N	I	G	S	V	P	M	I	Q	M	G	A	K	E	I	S	D	Y	I	V	K	Q	I	n	s	2	4	a
White (Bac)	L	N	S	I	T	T	N	I	E	S	I	P	M	I	L	I	G	A	R	E	I	S	D	H	T	V	R	Q	I	n	s	2	4	a
Cle/Bac chimera 1	S	N	S	I	T	T	N	I	G	S	V	P	M	I	Q	M	G	A	K	E	I	S	D	Y	I	V	R	Q	I	n	s	2	4	a
Cle/Bac chimera 2	S	N	S	I	T	T	N	I	E	S	V	P	M	I	Q	M	G	A	K	E	I	S	D	Y	I	V	K	Q	I	n	s	2	4	a
Cle/Bac chimera 3	S	N	S	I	T	T	N	I	E	S	I	P	M	I	Q	M	G	A	K	E	I	S	D	Y	T	V	R	Q	I	n	s	2	4	a
Cle/Bac chimera 4	S	N	S	I	T	T	N	I	E	S	I	P	M	I	Q	M	G	A	K	E	I	S	D	Y	I	V	K	Q	I	n	s	2	4	a
Cle/Bac chimera 5	S	N	S	I	T	T	N	I	G	S	I	P	M	I	Q	M	G	A	K	E	I	S	D	Y	I	V	K	Q	I	n	s	2	4	a
Cle/Bac chimera 6	S	N	S	I	T	T	N	I	G	S	I	P	M	I	Q	M	G	A	K	E	I	S	D	Y	I	V	R	Q	I	n	s	2	4	a



Variant Mining™ in action: replacement of the *Saccharomyces cerevisiae* adenosine biosynthesis pathway with the human pathway enabled by Variant Mining™ of PPAT sequences from humans, camels and whales to evolve a fully complementing PPAT enzyme with equivalent growth to *Sc* ADE4 trans complementation. DOI: 10.1093/nar/gkz1098

Parts Repository

STORAGE TYPE	DESCRIPTION
Short-Term	Store source oligos and purified DNA or glycerol stocks at Neo for short periods of time (e.g. 1-2 months) to enable rapid re-order and scale-up of assay winners
Long-Term	Store source oligos and purified DNA or glycerol stocks at Neo for long periods of time (e.g. 1-2 years) for rapid re-order and scale-up of inventoried DNA products or for disaster recovery



PLACING ORDERS AT NEO

To get started, please email a project description to info@neochromosome.com