1. Na PubMedu si najprej odpreš advanced search. iščemo s pomočjo leta izdaje in nahajanja besed v naslovu:

    a. *(("2000"[Date - Publication] : "2000"[Date - Publication])) AND (catalytic antibody[Title])*.
    b. Dobimo dva zadetka. Naš članek je prosto dostopen.
    Povezava do članka: DOI: 10.1073/pnas.97.18.9892

Structural evidence for a programmed general base in the active site of a catalytic antibody

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Affiliations + expand

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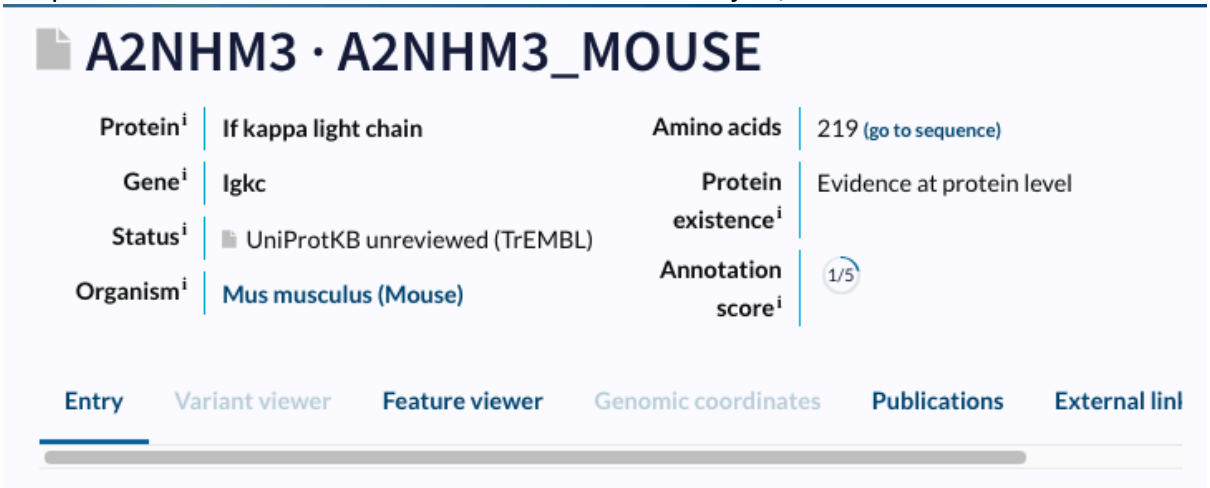
Abstract

The crystal structure of the complex of a catalytic antibody with its cationic hapten at 1.9-A resolution demonstrates that the hapten amidinium group is stabilized through an ionic pair interaction with the carboxylate of a combining-site residue. The location of this carboxylate allows it to act as a general base in an allylic rearrangement. When compared with structures of other antibody complexes in which the positive moiety of the hapten is stabilized mostly by cation-pi interactions, this structure shows that the amidinium moiety is a useful candidate to elicit a carboxylate in an antibody combining site at a predetermined location with respect to the hapten. More generally, this structure highlights the advantage of a bidentate hapten for the programmed positioning of a chemically reactive residue in an antibody through charge complementarity to the hapten.

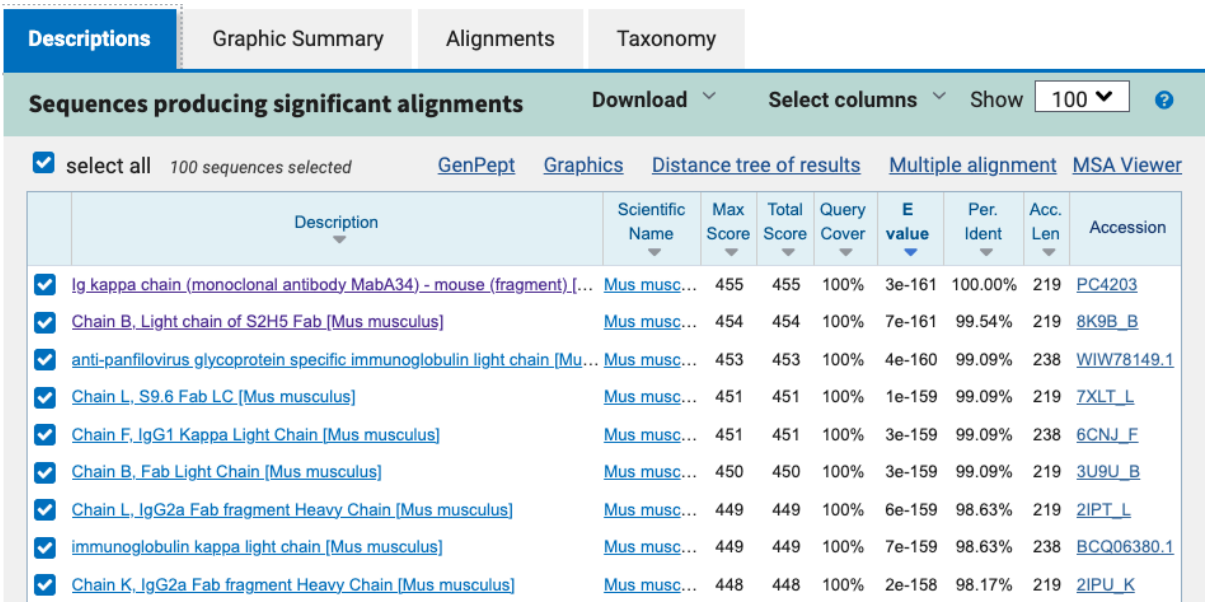
2. Na PDB lahko poiščemo 1F3D in dobimo zadetek našega proteina. Lahko pa vnesemo 4B2 in dobimo dva zadetka. Pravi protein je prvi.
Povezava do proteina na PDB: PDB DOI: https://doi.org/10.2210/pdb1F3D/pdb

3. Organizem v katerem se katalitično protitelo nahaja je miška (Mus muscuukus). Struktura je bila določena z difrakcijo rentgenskih žarkov pri resoluciji 1,87Å. Naš protein ima 2 polipeptidni verigi torej gre za dimer. Ena polipeptidna veriga ima 3 alfa helikse in 19 beta ploskev.

4. Na UniProt pridemo tako, da vpišemo kodo proteina 1F3D. V vezavnem mestu je potreben Zn^{2+} ion. Naš monomerni protein tehta 24165Da, dimer pa 48330Da. Imamo pa dva disulfidna mostička. Naša izoelektrična točka je 7,06.



5. S pomočjo blastp smo poiskali homologa. Prvi vrnjen zadetek, dobimo identičen protein zato izberemo drugega, ki ima najmanje E vrednost in največji % ujemanja. Naš homologen protein je dolg 219 aminokislinskih ostankov.



Descriptions | Graphic Summary | Alignments | Taxonomy

Sequences producing significant alignments Download Select columns Show 100

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Description	Scientific Name	Max Score	Total Score	Query Cover	E value	Per. Ident	Acc. Len	Accession
Ig kappa chain (monoclonal antibody MabA34) - mouse (fragment) [...	Mus musc...	455	455	100%	3e-161	100.00%	219	PC4203
Chain B, Light chain of S2H5 Fab [Mus musculus]	Mus musc...	454	454	100%	7e-161	99.54%	219	8K9B_B
anti-panfilovirus glycoprotein specific immunoglobulin light chain [Mu...	Mus musc...	453	453	100%	4e-160	99.09%	238	WIW78149.1
Chain L, S9.6 Fab LC [Mus musculus]	Mus musc...	451	451	100%	1e-159	99.09%	219	7XLT_L
Chain F, IgG1 Kappa Light Chain [Mus musculus]	Mus musc...	451	451	100%	3e-159	99.09%	238	6CNJ_F
Chain B, Fab Light Chain [Mus musculus]	Mus musc...	450	450	100%	3e-159	99.09%	219	3U9U_B
Chain L, IgG2a Fab fragment Heavy Chain [Mus musculus]	Mus musc...	449	449	100%	6e-159	98.63%	219	2IPT_L
immunoglobulin kappa light chain [Mus musculus]	Mus musc...	449	449	100%	7e-159	98.63%	238	BCQ06380.1
Chain K, IgG2a Fab fragment Heavy Chain [Mus musculus]	Mus musc...	448	448	100%	2e-158	98.17%	219	2IPU_K

6. Proteina sta 100% podobna, do edine razlike prihaja v identičnosti in sicer na 30 in 32 mestu.

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20-238             1 DVLMTQTPLSLPVSLGDQASISCRSSQSILHSNGNTYLEWYLQKPGQSPK     50
                     ||||||||||||||||||||||||||||:|:||||||||||||||||||
A2NHM3_MOUSE       1 DVLMTQTPLSLPVSLGDQASISCRSSQSIVHTNGNTYLEWYLQKPGQSPK     50

20-238            51 LLIYKVSNRFSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYYCFQGSHVP    100
                     ||||||||||||||||||||||||||||||||||||||||||||||||||||
A2NHM3_MOUSE      51 LLIYKVSNRFSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYYCFQGSHVP    100

20-238           101 RTFGGGTKLEIKRADAAPTVSIFPPSSEQLTSGGASVVCFLNNFYPKDIN    150
                     ||||||||||||||||||||||||||||||||||||||||||||||||||||
A2NHM3_MOUSE     101 RTFGGGTKLEIKRADAAPTVSIFPPSSEQLTSGGASVVCFLNNFYPKDIN    150

20-238           151 VKWKIDGSERQNGVLNSWTDQDSKDSTYSMSSTLTLTKDEYERHNSYTCE    200
                     ||||||||||||||||||||||||||||||||||||||||||||||||||||
A2NHM3_MOUSE     151 VKWKIDGSERQNGVLNSWTDQDSKDSTYSMSSTLTLTKDEYERHNSYTCE    200

20-238           201 ATHKTSTSPIVKSFNRNEC    219
                     ||||||||||||||||||
A2NHM3_MOUSE     201 ATHKTSTSPIVKSFNRNEC    219
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