Hkkjrh; df"k vuq/kku if=dk] **35**(4): 253-256 DOI: 10.18805/BKAP248

jkx vuq/kku e to lpuk foKku% lf{kIr ifjp;

jRuk çHkk[1] jtuh dekjh[2] Mh-ih- flag[3] vfuy jk;[1] ,o lt; dekj[4]
vkbl,vkj&Hkkjrh; —f"k lkf[;dh vuq/kku lLFkku] ub fnYyh&110 012] Hkkjr

ikIr% vDVcj 2020 Lohdr% uoEcj 2020

lkjk'k

to lpuk foKku ,d rth l mHkjrk gvk fo"k; g tk jkx vuq/kku lfgr lHkh tfod vuq/kku {k=k e egRoi.k Hkfedk fuHkkrk gA lØked jkxk d vuq/kku e to lpuk foKku midj.k vkj rduhd yxkrkj bLreky gk jg gA to lpuk foKku iFkk tu igpku vkj vuØe.k] jkxk.kjk/kh çfrjk/k dk irk yxku vkj edkcyk dju d lkFk] jkxtudrk vkj fo#yl dh igpku e lgk;rk dj jgk gA to lpuk foKku d mi;kx d lkFk] unkfud ueuk l db vyx&vyx cDVhfj;k vkj ok;jy jkxtudk dk irk yxk;k x;k gA bl y[k e] ge unkfud vuq/kku e to lpuk foKku d mi;kx vkj egRo d ckj e lf{kIr fooj.k n jg gA

'kCn dth: to lpuk foKku] lØked jkx vuq/kku] iFkk tu igpkuA

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Bioinformatics in disease research: Brief introduction

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ABSTRACT

Bioinformatics is a newly emerging discipline playing important role in all biological disciplines including disease research. Bioinformatics tools and techniques are continuously applied in research of infectious diseases. Bioinformatics is assisting in Pathogen identification and typing, identification of pathogenicity and virulence along with detecting and combating antimicrobial resistance. With the use of bioinformatics, many different bacterial and viral pathogens are detected from clinical samples. In this article, we are giving a brief overview about the use and importance of bioinformatics in research of disease biology.

Key words: Bioinformatics, Disease research, Pathogen identification.

çLrkouk

to lpuk foKku ,d rth l mHkjrk gvk {k=g rFkk ;g xf.kr] lpuk foKku vkj tho foKku dk lfEefyr bLreky djd tfod ç'uk d mÙkj nu e enn djrk gA 'kCn ^to lpuk foKku* dk igyh ckj bLreky 1968 e gvk Fkk vkj bldh ifjHkk"kk igyh ckj 1978 e nh xb FkhA to lpuk foKku dk ^dEI;V'kuy tho foKku* Hkh dgk tkrk gA gkykfd] okLro e] dEI;V'kuy tho foKku e[; :i l tfod ç.kkfy;k d e,Mfyx l lcf/kr gA to lpuk foKku d e[; ?kVd g ¼1½ l,¶Vo;j Vy vkj ,Yxkfjne dk fodkl vkj ¼2½ fofHkUu çdkj d l,¶Vo;j Vy vkj fo'k"k ,Yxkfjne dk mi;kx djd tfod MVk dk

fo'y"k.k vkj 0;k[;k

to lpuk foKku ey :i l tfod ç.kkyh e lpukRed çfØ;kvk dk v/;;u gA bl y[k e ge to lpuk foKku d fofHkUu lØked jkxk d vuq/kku e bLreky d ckj e ppk djx] tk gky d o"kk e fofHkUu ^^vkfeDl^^ ¼thukfeDl] VkfLØlVkfeDl] çkfV;kfeDl vkfn½ ekeyk d v/;;u dk mi;kx djd fd;k x;k gA fdlh Hkh MVk d fo'y"k.k e to lpukRed ,Yxkfjne vkj midj.k egRoi.k lk/ku gA bl y[k e to&foKku e fofHkUu leL;kvk vkj lek/kku ij dN fooj.k çnku dju dk ç;kl fd;k x;k g ftudk oreku ih<h d oKkfud fHkUu vuØe.k j.kuhfr;k ij /;ku dfær djr g, lkeuk djr gA

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[1]vkbl,vkj&Hkkjrh; —f"k lkf[;dh vuq/kku lLFkku] ub fnYyh&110 012] Hkkjr [2]Hkkjrh; —f"k vuq/kku ifj"kn dk ioh vuq/kku ifjlj] iVuk&800 014] fcgkj] Hkkjr [3]vkbl,vkj&Hkkjrh; lCth vuq/kku lLFkku] tf[kuh] okjk.klh&221 001] mÙkj çn'k] Hkkjr [4]fcgkj oVujh d,yt] fcgkj i'k foKku fo'ofo|ky;] iVuk&800 014] fcgkj] Hkkjr

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to lpuk foKku dh jkx vuqla/kku e çklfxdrk

thukfeDl vkj to lpuk foKku u lØked jkxk dh gekjh le> e cgr ;kxnku fn;k g] jkx d jkxtuu r= vkj jkxk.kjk/kh çfrjk/k d çlkj] çfrj{kk çfrfØ;kvk dh ikf"krk d ckj eA Mx ok;jl ¼DENV½ Mx c[kkj dk dkj.k curk g] tk ,d ePNj tfur ok;jy jkx g] rFkk lkykuk 350 fefy;u l vf/kd ekeyk d fy, ftEenkj g ¼WHO 2017(fo'o LokLF; lxBu if'peh ç'kkr {k=] 2018½A ij thuke fo'y"k.k d ek/;e l ,l,uih thukVkbfix vkj ,l,uih dk mi;kx dj Mx ok;jl lØe.k d f[kykQ lj{k.k ;k lj{k.k çnku dju oky ,l,uih dh igpku dh x;h g ¼Mh dkokYgk ,V vy] 2017½A Mx ok;jl d çdkik dh tkp dju d fy, i.k thuke vuØe.k (WGS½ vkj Qkbyk tufVd fof/k;k dk mi;kx fd;k x;k gA

eyfj;k dk e[; dkj.k] ih- QkYlhije ¼P- *falciparum*½ d vkuokf'kd ifj–';] dh tkudkjh d fy, xgu vuØe.k }kjk i,fyekfQEl vkj ljpukRed vkj çfrfyfi l[;k fHkUurkvk dh igpku dh tk jgh g] tk ijthoh fodkl d fy, eyHkr gA ¼fDovRdkf0Ld] 2015½A ck;kbuQ,jefVDl ufiNyh nokvk tl Dykjk Dohu vkj vkVhfeflfuu&vk/kkfjr l;ktu fpfdRlk¼,lhVh½ d fy, mHkjr çfrjk/k d fy, çfrjk/kh r= dh gekjh le> e ;kxnku fn;k gA ekuo e ukoy eyfj;k çfrjk/k ykdh ¼loci½ dh [kkt d fy, thukfeDl dk mi;kx fd;k x;k g] tk xHkhj eyfj;k l 33% lj{kk çnku djrk g ¼eyfj;k thukfed ,fiMfe;ky,th uVod] 2015½A

Qkbyfj;k d fy, mrjnk;h thok] MCY;- cuØ,¶Vh (W- bancrofti½ vkj vk- o,Yoyl ¼O- volvulus½ thuke dk vuØfer fd;k x;k g] tk vkx d thukfed fo'y"k.k d fy, volj çnku djrk g ¼Mltkf MUl ,V vy] 2013) d,Vu ,V vy] 2016½A dEl;V'kuy fo'y"k.k d lkFk ;fXer vk.kfod v/;;u u ekuo etcku dkjdk vkj Qkbyfj;k unkfud vfHk0;fä;k d chp ,d lg;kx dk çn'ku fd;k gA

fofHkUu MVkclk e etcku vkj jkxtudk d ij thuke vuØe.k dh miyC/krk u ub nok vkj oDlhu y{;k dh [kkt e tcjnLr çxfr dh vkj vxlj fd;k g ¼;ku ,V vy] 2015] ft;k] 2017½A ;g oDlhu vkj Mx y{;k dh igpku d fy, mPp FkiV bu&flfydk LØhfux e l{ke cukrk g] bl çdkj p;fur y{;k ij egxh ç;kx'kkyk LØhfux e/;ku dfær fd;k tkrk gA vkfeDl çk|kfxd fd;k vkj to lpuk foKku fo'y"k.kk l nok vkj oDlhu y{; [kkt d çfru, Kku dh çkflr e dkQh enn feyh g ¼;ku ,V vy] 2015(ft;k] 2017½A thukfed] VklfØiVkfed vkj çkfVvkfed fo'y"k.kk u Qkbyfj;k ijthoh tl jkxtudk d fy, u, lHkkfor ck;kekdjk dh igpku dh g tk Mk;XukfLVDl] oDlhu vkj Mx MoyieV e veY; gk ldr g ¼vkeLVkx ,V vy] 2016 cUu# ,V vy] 2017½A

vk.kfod tho foKku] thukfeDl] VklfLØlVkfeDl vkj çkfVvkfeDl e mRiUu c<r vkdMk d fo'y"k.k e to lpuk foKku l'kk/kuk vkj rduhdk dk vuç;kx xfr çklr dj jgk g ¼gkxox] 2011½A bld vykok] vk.kfod çkQkby cuku vkj jkxtudk egkekjh foKku lc/kh MVk dk ,df=r dju d fy, MVkcl vkj lkfgR; d :i e lpuk dh ek=k Hkh c< jgh g ¼dkfjdk ,V vy] 2013½A blfy,] to lpuk foKku l'kk/kuk vkj rduhdk dk mi;kx] jkxtud djd d igpku vkj vuØe.k e] 'k#vkrh funku vkj mipkj d fy, ekdjk dh igpku djuk e vfuok; g ¼lk,c ,V vy] 2017½A to lpuk foKku u ,uth,l vuØe.k MVk fo'y"k.k }kjk fofHkUu çdkj d ueuk l unkfud :i l çklfxd ok;jl dh igpku dju e dkQh enn fd;k g ¼iêh ,V vy] 2014½A blh rjg] çkFkfed ekuo unkfud ueuk l ,uth,l rduhd dk mi;kx djd Ýkflly k rykjfll ¼Francisella tularensi½ vkj ylVkfLijk l=klkb ¼Leptospira santarosai½ tl thok.k jkxtudk dh lQyrkiod igpku dh xb g ¼djknk ,V vy] 2012 foYlu ,V vy] 2014½A lØked jkxk l yMu e jkxtud d çdki dh fuxjkuh e to lpuk foKku rduhdk dk vuç;kx vko';d gA

jkxtud igpku vkj vuØe.k d fy, to lpuk foKku dk ç;kx

lHkh çdkj d jkxtudk dh igpku] y{k.k o.ku vkj thuke vuØe.k e to lpuk foKku dk cM ieku ij mi;kx fd;k tkrk gA bld lkFk gh ok;jy] cDVhfj;k vkj Qxy lØe.k d funku vkj çc/ku e thukfed –f"Vdk.k dk 0;kid mi;kx gvkA to lpuk foKku d vuç;kxk dk mi;kx jkxtud? igpku] fo"kk.k dkjdk dk irk yxku] çfrjk/kd fo'y"k.k efd;k x;k gA ,uth,l çk|kfxdh] to lpuk foKku] Qyk tufVd] vkj iFkk&thukfeDl fo'y"k.k }kjk DykLVhfM;e gekyhfVde vkblkyVM dh ,d çjd ,tV d :i e igpku dh x;h g ¼lk,c ,V vy] 2017½A bl çdkj] NGS rFkk to lpuk

foKku }kjk lgk;rk çkIr djd ij thuke vuØe.k ¼WGS½ dk mi;kx djr g, ekuo ueuk l iFkd jkxtud igpku d fy, dkQh lHkkouk, j[krk g ¼oLrkDd] 2012½A cDVhfj;y vkj Qxy jkxtudk dh igpku d fy, MCY; th, l vkj jkbckIkey ¼vkjvkj,u,½ thu vuØe.k MVk dk fo'y"k.k dju e to lpuk foKku dk vuç;kx gky d o"kk e fu;fer gkrk tk jgk gA ,uth,l&vkjvkj,u, vuØe.k MVk d fo'y"k.k e mUur rFkk cgrj to lpuk foKku midj.kk dh vko';drk ekbØkck;ke v/;;u e mHkj jgh g ¼fDyU}kFk ,V vy] 2013½A

,uth,l çk|kfxfd;k dk to lpuk foKku d lkFk l;ä :i l fofHkUu lØked jkx vul/kku e lQyrkiod mi;kx fd;k x;k g] tk lkotfud LokLF; çkIfxdrk d fy, dkQh mi;kxh gA mnkgj.k d fy,] ,uth,l vkj ck;kbuQ,jefVDl –f"Vdk.kk dk mi;kx çdki mRifÙk] jkx lpj.k dk irk yxku e] egkekjh dh xfr'khyrk dh tkp] fdlh chekjh d ,fV;y,ftdy ,tVk dk fu/kkj.k vkj ukoy ekuo jkxtudk dh [kkt dju d fy, fd;k x;k g ¼cjh ,V vy] 2020½A

to lpuk foKku dk jkx vkj vk"kf/k vul/kku e Hkfo";dk –f"Vdk.k

ck;kbuQ,jefVDl yxHkx 40 o"kk l g vkj tfod ç.kkyh e lpuk foKku çfØ;kvk d v/;;u d :i e 'k: fd;k x;k gA tlk fd vf/kdk'k tho foKku vkj fpfdRlk foKku ç;kxk e] vf/kd l vf/kd ^^cM MVk^^ cu jg g] yxHkx lHkh mi&fo"k;d {k=k e to lpuk foKku dh 'k:vkr u to lpuk foKku dh db 0;k[;kvk dk tUe fn;k gA ;g Li"V g fd to lpuk foKku u vuØfer thuke d fo'kky foLrkj vkj fo'k"k :i l db cM MVkIV d lkFkd ryukRed fo'y"k.kk d fo'y"k.k egRoi.k Hkfedk fuHkkb gA gkykfd] vkj dEl;V'kuy 'kfä d lkFk] MVk dh vf/kdrk dk [krjk g] vkj v/;;u d rgr ç.kkyh dh ,d vPNh tfod le> vHkh Hkh vko';d gA

lØked jkxk l fuiVu vkj fu;=.k d fy, MVk dk fo'y'k.k dju d fy, db to lpuk foKku lk/ku miyC/k gA gkykfd] nok çfrjk/k ijh{k.k] jkxtud&etcku ckrphr] lØe.k vkj mipkj d ifj.kkek d fy, db to lpuk foKku midj.k g] ijUr fQj Hkh to lpuk foKku ikbiykbuk dk fodflr djd unkfud ekbØkck;ky,th vkj lØked jkxk e to lpuk foKku lk/ku vkj vuç;kxk dk lfo/kktud cuku vkj 'kkfey dju dh vko';drk gA

lnHk

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