



CHAPTER V

Appendices and References

5.1 APPENDIX I: EPGs:

Example 1: G6800/800 REV (sequencing of a cloned fragment with vector sequence primers)

Example 2: F66A (primer walking sequencing)



Model 377
Version 3.3
ABI100
Version 3.2

10-G68800F
G68800REV
Lane 10

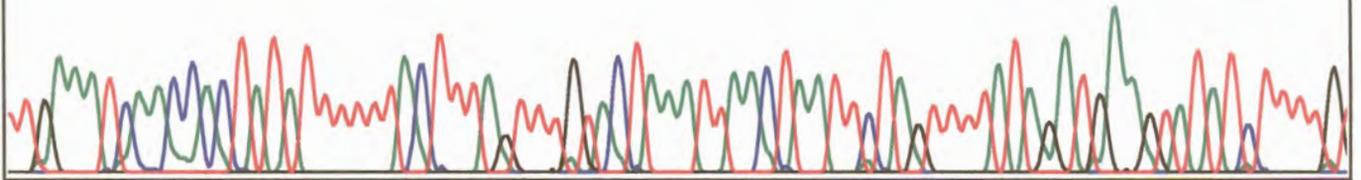


UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA 31 T:1627 C:1030

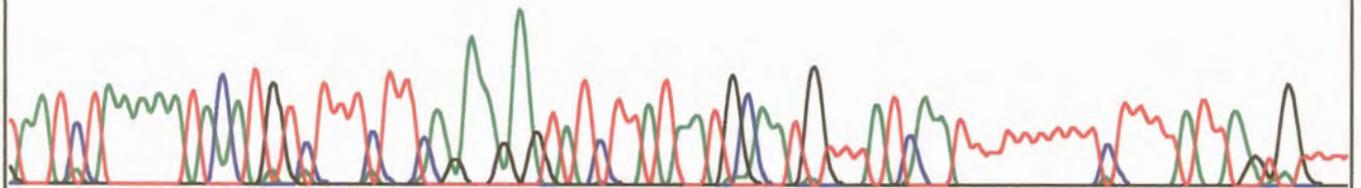
DT {BD Set Any-Primer} copy
dRhod 09/1999
Points 813 to 8264 Pk 1 Loc: 813

Page 2 of 2
Thu, Jun 22, 2000 7:26
Wed, Jun 21, 2000 15:28
Spacing: 9.93(9.93)

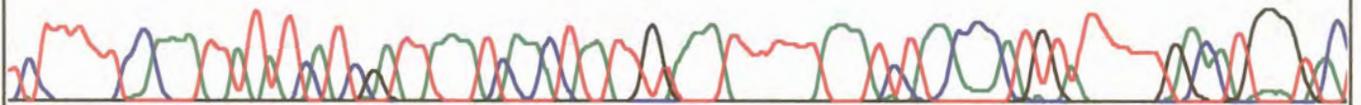
T G A A A T C A A C C A C T A T A T T T T T A C T T T A G T T T G T A C T A A A T T A A C T A A T T C T A G T T T T A T A G A T G A A G T A T A T C T T T T G T
410 420 430 440 450 460 470 480



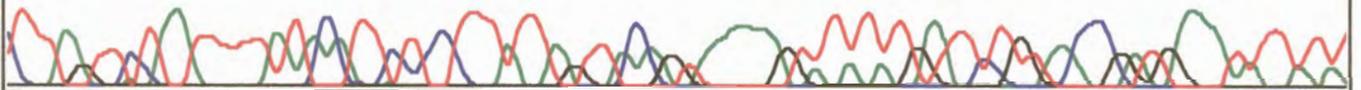
A A T C T A A A A A T A C A T G T C T T T C T T C A G A A G A G T A T C T T A T A A T G C A A T G T T T A T C A A T T T T T T T T C T T T T A T T A A G T G T T T T
490 500 510 520 530 540 550 560 570



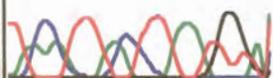
T C T T T T C C A A A T T A T A T C A T C G A T T A A A T C A A C T A A T T G G A A A T T T T T T T A A A T C T A A C C C A T G T T T T T T G A C A T G G G T C T
570 580 590 600 610 620 630 640 650



T T T A A T C T A A T T T T A T A C T T C T T C N T T A T T A N T A C A G T A A A A A G T T T T N T N T G A T C T G T A C C G A T G A A A T A T T A T T
650 660 670 680 690 700 710 720



T A N T T A C N T A T G N A
730





Model 377
Version 3.3
ABI100
Version 3.2

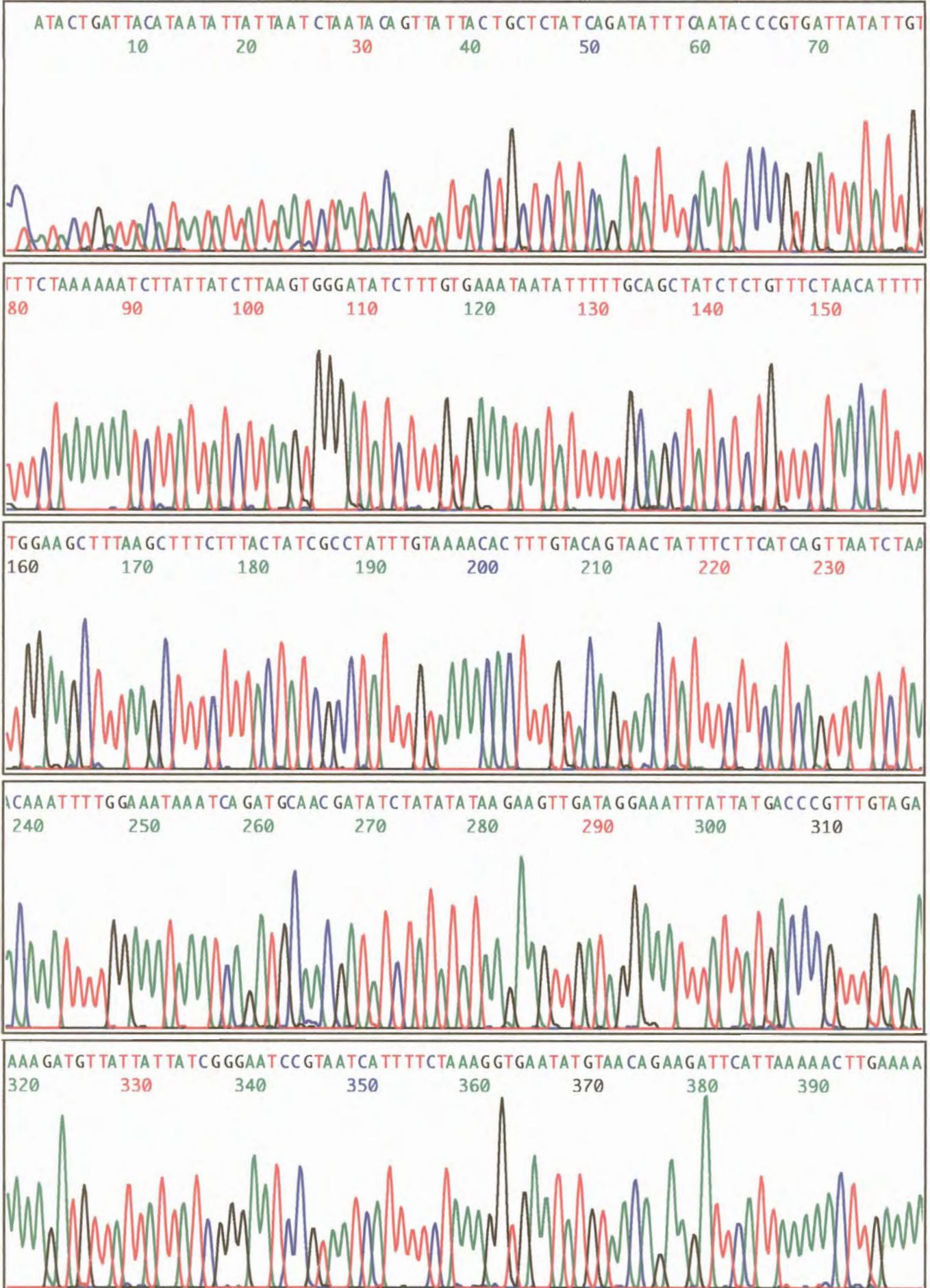
06-C-6F66A
C-6F66A
Lane 6



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

T:113 C:65
DT {BD Set Any-Primer}
48cmfilterE7/3/00
Points 1374 to 11804 Pk 1 Loc: 1374 Spacing: 10.97{10.97}

Page 1 of 3
Thu, Sep 28, 2000 8:05
Wed, Sep 27, 2000 15:17





Model 377
Version 3.3
ABI100
Version 3.2

06-C-6F66A
C-6F66A
Lane 6



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA ; T:113 C:65

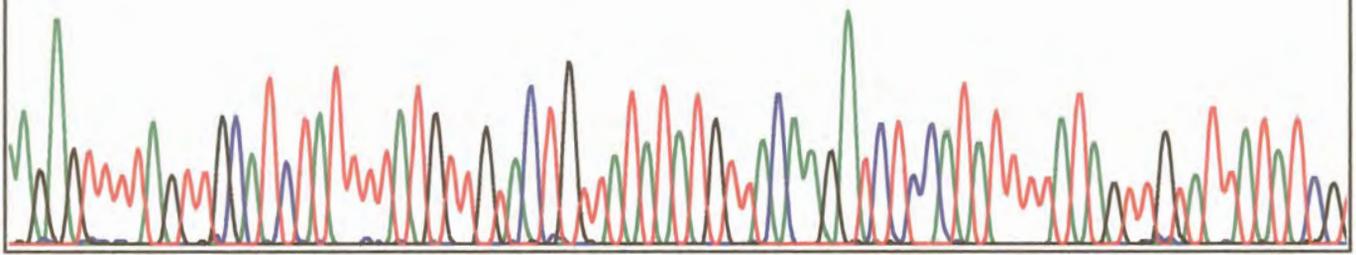
DT {BD Set Any-Primer}
48cmfilterE7/3/00
Points 1374 to 11804 Pk 1 Loc: 1374 Spacing: 10.97{10.97}

Page 2 of 3

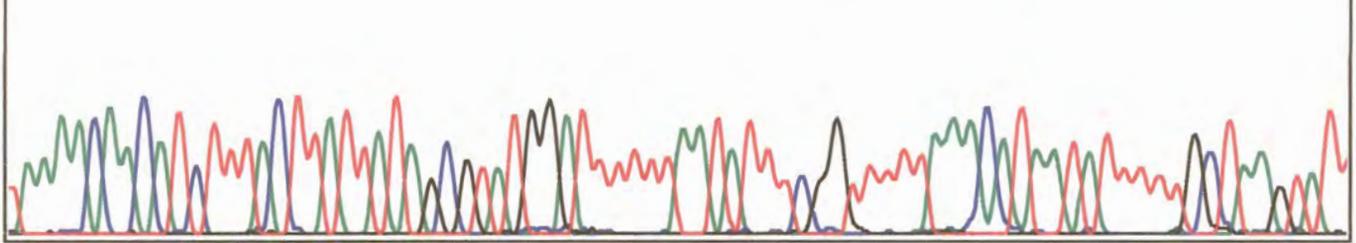
Thu, Sep 28, 2000 8:05

Wed, Sep 27, 2000 15:17

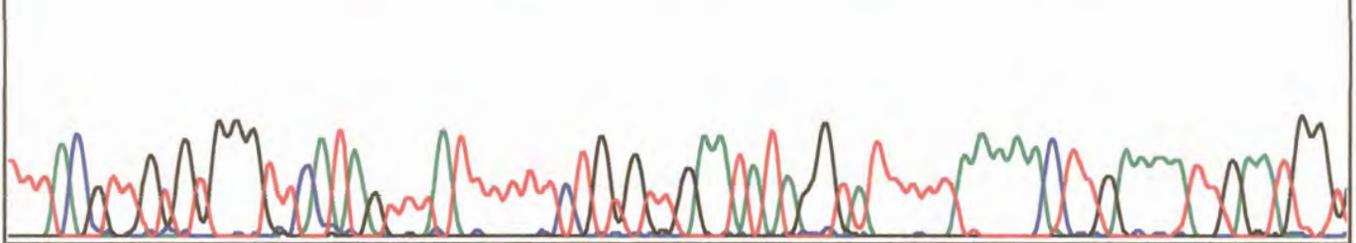
AGA G T T T T A G T T G C A T C T A T T T T T A T G T T G T A C T G T T A T A T A T G T T A C A A G A T C T C C A T A T T T T A T A G T T G T A T T A T A T C G T
00 410 420 430 440 450 460 470 480



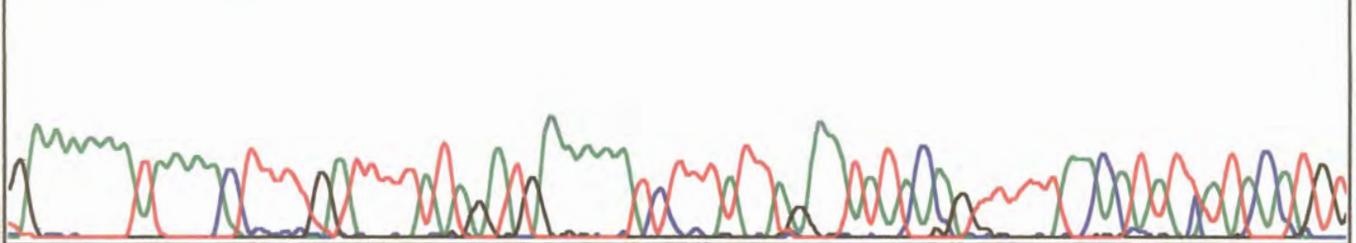
T A A A C A A C A T C T T T A C T T A T T A T A G C G T A T G G A T T T T T T A A T A T T T C G G T T T T A A C A T A A T A T T T T T G C T A A G T A T
30 490 500 510 520 530 540 550



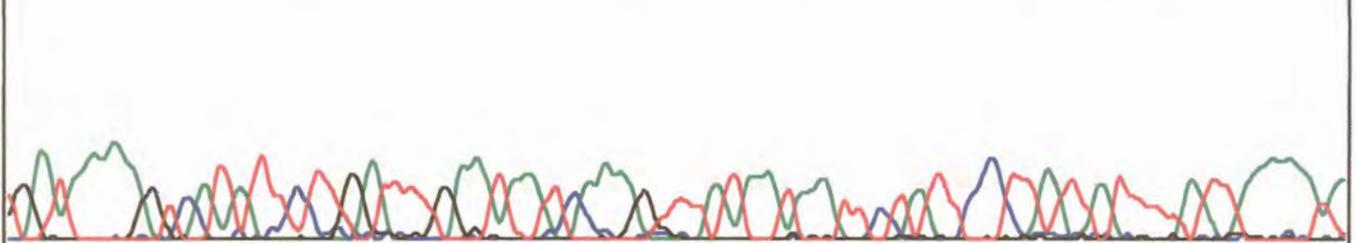
T T T A C C G T T G T G T G G G T T C A T A G T T T A T T T T T T C T G T G T T G A A T A T A G G T A T T T T T A A A A A C T T G A A A A T T G A A T G G T
560 570 580 590 600 610 620 630



G A A A A A A T A A A A C T T T T G A T T T T A T A G A T G A A A A A T C T T T A T T A G A A T A T A C A G T T T T T A A C A T A T C A T A C C A T G T
640 650 660 670 680 690 700 710



G A T A A A A A G T C A T A T T C T T G G A T T T G A A T A A T C A A A G T T A T A A T A A T T C T A T T C C T T A T T A T T T T A T T A A A A A T A
720 730 740 750 760 770 780 790





Model 377
Version 3.3
ABI100
Version 3.2

06-C-6F66A
C-6F66A
Lane 6



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

DT {BD Set Any-Primer}

48cmfilterE7/3/00

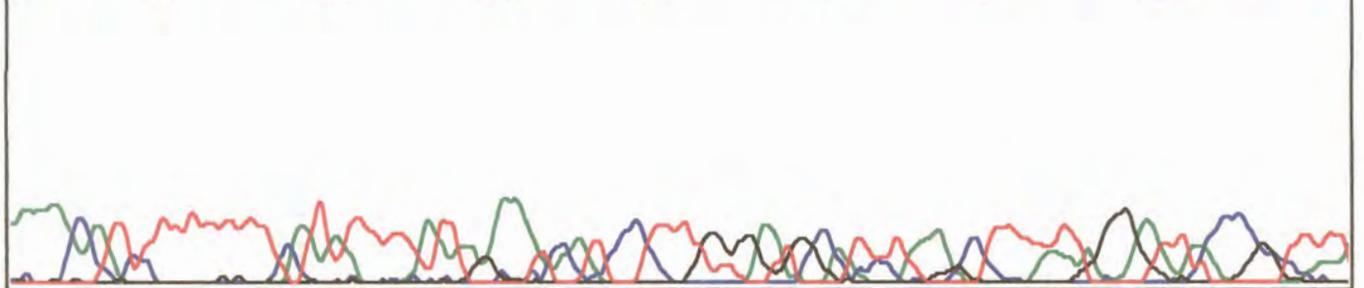
Points 1374 to 11804 Pk 1 Loc: 1374 Spacing: 10.97{10.97}

Page 3 of 3

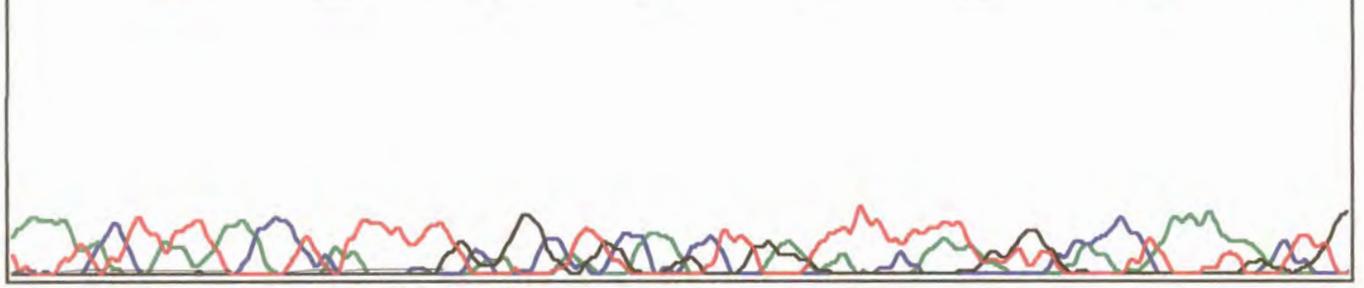
Thu, Sep 28, 2000 8:05

Wed, Sep 27, 2000 15:17

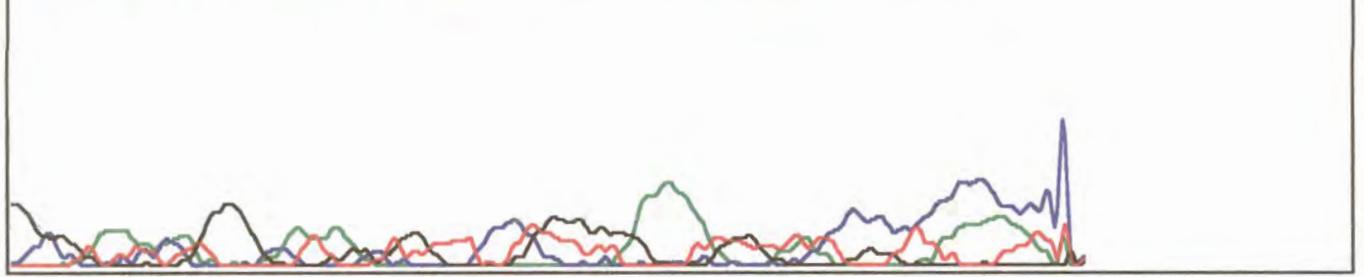
AAA CATCTTTTTT TT CATA TTTTATTAGAAA CCATCCC TT GGGGAAGGCATC TAAAGCTTTTTTNGGATTACCCGTTT
0 800 810 820 830 840 850 860 870



AAAATAC TTTTAAACCCCT CTTTTTTTGCNNGC TTGCCAANCTTGGANG TTTTNTNTANNNGCC CCTAAANACTTTG
880 890 900 910 920 930 940 950



GNCGGTAA C CNAAGGNCAT ANGCTTGT TTTCCCTGGGGGGAANTGGTTATCCCCNNCCCCCCC
960 970 980 990 1000 1010



5.2 APPENDIX II: DNA sequences from primer walking sequencing

Primer G550P

G6800/550 ATTAATAAAAATAAATGAGTTTATAGACAATAATATTATTAAT G6800/800

Primer F66A - No gap identified at *AseI* junction

Primer K12/K5P - No gap identified at *AseI* junction

Primer E2150A - No gap identified at *AseI* junction

Primer F66B

F6600/800 ATTAATAAAAAACCTAGTAATAAAATGCAGTAATATCTAAGTAACATATAGTTTATATAAT
CAGGAAGAAATTAATGCTACTGATATATTTATTAAT F6600/y

Primer F29A - No gap identified at *AseI* junction

Primer F29B

F6600/1000 ATTAATTGAAAAATCCGACGAGTTTTAACTTTTTATCCATTAAT F6600/x

Primer F29C

F2900/y ATTAATTGCATCATCATTAAAT F2900/x

Primer G6800/501 (Fragment G6800/603)

G6800/602
ATTAATATTTTTCTCATATGAAGTAAGTCTGCATGATGTGTGTAGAATTAATAAATGTAAGTCTCTCACAT
TATTAAGATAGATATGTCACAGAGAATTTATTGTCAGGATGCCAAAGAATGGTGAATGAAATTATTCAA
AAAATGATAATATCACTAATTCGATCTAATAATAATCAAGATATTCTTATTTTGAAAAAAAAATATGGAAG
AGGTTATTATTTGCAACTGTCAACTGCCAGAAATGAAAAATAGTTCATATGAAATCTTTTTAATAAATCCA
TTTGTAATAAAAAACAACACAGATATATTTAAAAATTTGATTTTAAGGTCATCGATTAACTATTTTCATATT
TGATAATTATGCACCACAGAAAAAATTTTAACGCATATATACCCATCCTTTAATATAGAAAAACGTATA
TATATATAAACTTTAACGAAATAAATAATATTTAAAAATAATAAAAAAATGTTATCATAGAAATAAAATTAGA
GCTTTATGCGTGGTTTAATTTTCAAATATGTGAAAAATAATGAAATAGAAAATGAAAAGGTAAAAAATAA
ACAATGATTTGTATAGCTTAATATGAAAACCATAAAAAACAAAATCTTTTCCTTATTGTATAGAATATCATG
ACGATTGGGAAGCCGTTATTAAT G6800/502

Manual DNA sequence of the region between the *AseI* junctions of clone K650 and K500

K650
ATTAATGTATATCTATTACTCATTGATTTCAATTATTGTATTCATAACACAATTTGCTTCAGAAG
TTCCAGAATTAAT K500

DNA Sequence of clone BC6 (with T7 primer) determined by automated DNA sequencing

The following DNA sequence of a fragment between G6800/601 and G6800/550 was determined from an overlapping *NdeI* fragment cloned into pMOS.

G6800/601

```
ATTAATTGTAGATTATATAGTAAATAGAGACACTATATAAAAAAACCTTAAACGATAAATGGATGAAAGA  
TTAAAGACGATTTCTATGACTTTTTTTGGTGAATTAACAACACTACAGATATAATGGTTTTAAAGGCACACCT  
GTTAAACATTTTTCCAAATGATACTATTTTTCTATAAATGAGGATAATAAATTTATAATTGACTTTAAAT  
ATAACGATGTTTAGCTTCAGGTTATATTAACCAAAAAATAATACCTATAACTCCAGAAAAATACAATGAAT  
ATTCATCGATGATAGCTAAAGAGTTGACAAAATTATAATATTATCATTGATGATATTAAGGGCATATACTAC  
ATCTAAAAAACTTAAAAGATTTATTAATTTTATAAAAACAAATAAATAATAAACAAAATAAAAAATAATT  
AACGCAAGTAAAAAATTAATATTGGCGTTAAATAAAAAGGAATTGATTATGATTATATTAGACATTAAT
```

G6800/550

5.3 APPENDIX III: Peptide amino acid sequences

>E1L TRANSLATE of: e29sept.seq /rev check: 3757 from: 4 to: 718
MGAVVFFAFLFLFKLCYSFPKDIKLTNSDNFNSKIEWTNDVSDSNYRVMIMTYSSGEWKQAC
NYTIQKYCNVSPFIDDNTDDFWIKFITVDNTESNVFTFKPICESVVITTPSVFIKRQDVN
TVLTIHPLAKDNNKNSPIYNNDKYCNIVFKYILSITFGDSNTIKYEVDQFCDKKGCAL
EFGSQEKVCVTVFGNYETDYYQIRTNETSACIDELTPRKVDVDFLVKQKTDLSLLKRR

>E2L TRANSLATE of: e29sept.seq /rev check: 3757 from: 755 to: 1445
MYTKNFKIFTKYITFLFSINEKKVKYFLNKVYFLSNYDYTKDDITKIVLKNSNKFTFTM
IKVISEYVLNENDYKKVIKELKIDGEYYADFYPFIKSKSPKHINSMKKVNFNDMMENYFM
VRKMKNTKKKIGKIYAEFLTYDAMAVNHYGVEYINKIISKLRLSKTRYCFSLYEKNNENVI
DITTMKYIIGLISIISSHDTCKYPSFYIPFDEISHPKRKEFEKYICDRFP

>E3L TRANSLATE of: e29sept.seq /rev check: 3757 from: 1498 to: 1984
MEGSDNTNTHCWICKDEYNVSTNFCNCKNEFKIVHKNCLEEWINFSHNTKCKICNGKYNI
KKNKKSCLRWKCSFMYCNVPAICVSLICLILLPLTILLVKFNLKSMLNENIENRDLIALIS
AMAYSLPCVVGFITVWHILIALYDYLLAAKSDNTTYQVYEYI

>E4L TRANSLATE of: e29sept.seq /rev check: 3757 from: 2030 to: 3173
MNYTLSTVSSATMYNSSSNITTIATTIISTILSTISTNQNNVTPSTYENTTTISNYTTA
YNTTYYSDDYDDYEVNIVDIPHCDGVDTTSFGLITLYSTIFFLGLFGNIIVLTVLRKYK
IKTIQDIFLLNLTLSDLIFVLVFPFNLYDSIAKQWSLGDCLCKFKAMFYFVGFYNSMSFI
TLMSIDRYLAVVHPVKSMPIRTKRYGIVLSMVVWIVSTIESFPIMLFYETKKVYGITYCH
VFYNDNAKIWKLFINFEINIFGMIIPLIILLYCYKILNLTAKTSQTKNKAIAKMFVFLIVI
CSVLFLLPFSVTVFVSSLYLLNVFSGCTALRFVNLAVHVAEIVSLCHCFINPLIDAFCSR
EFTKLLRLRSTSSAGSISI

>E5L TRANSLATE of: e29sept.seq /rev check: 3757 from: 3283 to: 3919
MEKEKLCSDYDNDFTDYLFRYCNPLFYVEQDDINGVKKWIKFVNDVNDLYETPLFSCV
EKDKVNVVEILKFLIENGSDINPKTRDNNLSALAHYLSFNKNVEPEIVKILIIDSGSSVTE
EDENGKNLLHMYMCFNVRINVIKLLIDSGVNFLOKDFDNNNIIYSYILFHSDDKIFDYL
TSLGIDIDETNTSGYNCKDLIKFRNLTFDFKQ

>E6L TRANSLATE of: e29sept.seq /rev check: 3757 from: 3966 to: 4893
MKTFFENNSEIVKCPYVDTLNNTTVKWFVNYNEYVKTGDVKKSFHEFKNTDRVYVSVGHS
LWINNITKNDSGIYACNVHNSTYYFTSSVMLDIYKKTINSVIGTNYELLCINTKNFINT
FNCSYEVNWWKDREKINNNFKYKKSKEKLLIRNISKSDGVLCSITATRCNPKNLALK
RYYHNNVIKKRFKDDINLTVNFLNSTIALGKNFLMECIGESKNIQRVYRSSFIFWLINGVN
VLDYDRSKNIYLGREMYVGNYSYKIALIIEVKRKYLSANFTCNLHNLEYNLYLTKKIYVNV
LKTLYKNEI

>E7L TRANSLATE of: e29sept.seq /rev check: 3757 from: 5053 to: 5320
MSSNSDLAFCYVLPNINEVTDGIVFIKDNIVYVKLINYGLEALVIDYVNVINMDQMNNIKK
TLVNKLINVQIIRMNKIKGYIDVKVYNN

>E8L TRANSLATE of: e29sept.seq /rev check: 3757 from: 5309 to: 5792
MISFKKVVICLTLFTTFYVYVYSKCAKKRDLVIYFPHKEGENVLLQCKGYSHHSNYAYVYV
LIGNNNSFVEFMNGDIYKERMVFNKKPLKCGKEPRSDLIKKNVTEEBIKNTNLTCVLMLE
EPIKKTILINDIWNCLNNTCEHKNGISSEKVVSESESKNVIE

>E9L TRANSLATE of: e29sept.seq /rev check: 3757 from: 5811 to: 6045
MLSKENKNDYITILNKDIMMCDKSNFCLNGGTCYKTTFILSYNKKPLMFCRCKLGYEGR
LMSFKKPVSLFLKKKYKI

>E10L TRANSLATE of: e29sept.seq /rev check: 3757 from: 6093 to: 6621
MDTSNYNIEKVLNVYLRDLRIESLNNNELAILIMIRECCEVIKKDYKTEFNEICNFILHNNVKSCYDINDV
KNIIIIETINSDFRPSVILASISLLSIIKKKKSENNEVVNDLALNELINTFSSYQKDIISFVEKNKKIDE
QNDFIFSIINFFVMIGSIIITYYLLKIIGRIRWK

>M1L TRANSLATE of: mcorrect.seq /rev check: 1649 from: 4 to: 85
 : e29sept.seq /rev check: 3757 from: 6665 to: 7022
MDHSSSVVNCIRLSAFAKLPTTSTDFSAGYDLYSAYDYIVKSKERILVKTDISLSIPKKCYGRIAPRSGLS
LYYCIDIGGGVIDEDYRGNIGVIFINNGKNTFNKIKRGRVAQIIFEKVEYPKIKEVKCLDGTNRDNNNGFGS
SGIL

>M2L TRANSLATE of: mcorrect.seq /rev check: 1649 from: 129 to: 1611
MINTGYITLNSKNVVDIFSISNVIEIKFIMDACTDFMINYIDDSNCVDILEDSYMYGICYD
VYDVADKYIKKRFMYISNDLTKLRVNELRPILKSSDLVVAEDFVLNFIKKGTVKKTNR
LNTMKLVNDAVRFTFLTEKGGKRLQAWSSRFKKKPYDFNKNSDKHIPRCNYKNREFINSD
KFTKSFKFKVYNDNLTKILFTNNIMDINI IDESVYDNELLYENNCNEIDENKTLNESIQQ
PSNLSKLSNIIDENFKFCTSAIGNNIYFLGGVDKYLRSVNSVFAINVKTFERENLPSLI
YPRKCPGATYFNNRIYVIGGIYNNCIVNKVESWSFGESVWREEPNLLYPRYNPCVVNVND
TIYVIGGISEYDKSVEVYNLKYKWSLGECKYSHYGGCAIYHHGLIYVVGGISYINNIIK
VFNMVESFNPMSCKWRIESCLNQPRFNSSICIFDDCIMIIVGGFHYERYIREIEIFDDKTK
GWDVIGALDIDSVF

>K1L TRANSLATE of: mcorrect.seq /rev check: 1649 from: 1743 to: 2223
 : k29sept.seq /rev check: 4453 from: 4 to: 487
MEPILKETSSRFVVPILYKEIWMYKKAVASFWTVDEVDLSKDLADWKKLNNEEQYFIK
NILAFFAASDGI VNNENLAERFYSEVQWSEARCFYGFQIAMENIHSEMYSLIDITYISSTK
EKEHLFNAIETMDFIKKKSEWARKWISNKKASFGERLIAFAAVEGIFFGSFAAIFWLKK
RGLMPGLTFSNELISRDEGLHCDFACLI FKHLKYPPSNDIITIIINEAVSIEKEFLTNI
PVKLI GMNCVLM SQYIEFIADRLLELGLCDKVMSTNPFDFMENISLEGKTNFFEKR VSE
YQKMGVISNKDDNVFSLDVDF

>K2L TRANSLATE of: k29sept.seq /rev check: 4453 from: 529 to: 787
MHQMNLTTAMPNNNAFSIGTVLILMVLIIVIVISLYLLFQLVNCFYLFDL FNKIKVRMMK
LTTRRSFDELENNVYIDDKCVGVNVD

>K3L TRANSLATE of: k29sept.seq /rev check: 4453 from: 830 to: 1166
MDKKIYCGIVFGYRLLKKSIEKAIKCVS FIRKSNMKPAISIERVTLLDGDGDGNGANDS
NSNSDSDTVSSKYNNYKYKFTKRKTPHKVMYYINYDSDSVSNDDVFL

>K4L TRANSLATE of: k29sept.seq /rev check: 4453 from: 1398 to: 1614
MSEKLLKVNKVVVNGKPYNSNSNSTPSKDEIKKYGYCLNIKKPSSHNDKKETYLHNDYP
MVIITNTSFDYDT

>K5L TRANSLATE of: k29sept.seq /rev check: 4453 from: 1692 to: 2340
MENHFQVDTLYNLFIERYLQNL SLYSVPVNTTCGIHISEIKGTLKGCKLKI INLCIDDKE
LSFYLLIKTFKEFANTLSQNEKYELANEVGDLDNDQDKNYIPEIIRKCTSSAAVTNVIDI
QTFDIGECIAPNGKNILLQIINFGTSEANCMNTIMKSMNRYTINNYIDNRI PFINDVH
WFIFVLIIFII FLGLCSIKRKRINIKYKYG SFLYV

>A1L TRANSLATE of: k29sept.seq /rev check: 4453 from: 2320 to: 3274
CRISIPKFLFNNLKGDEKKLIVCAWAMGVNFKLTFLYNLYKRVLYMILLIQTMDQKLS
ISNF SHKYFLKSFNEKKGDVKFVKLLSYFYPIVIQSNVNVINYFTHMFHFFEHEKRSNYL
YDRGNIIFPLAKFSSDKVSEKMAIELGFKSLVEYIKFIFLQ MALLYVKIYELPCCNNFL
HVDLKP DNILIFDSDESIKISLNENTYIFNEPIKA CLMILDFSQVANI INKKIKNNIKVE
HNWYDFHFIHTLLKTYPKETDKEFYNTLEKFIICCNKNTCDKFR LKISILHPISFLEK
IISKKNIFSTWINGKPLSS

>AXR TRANSLATE of: f3oct.seq check: 615 from: 3 to: 386
AEMRLISIIYSGNPIKLRICITGDDSIKYEKKMFYFNKIIRNRIIIINFDYSNQEYDFYHMYN
MLKTVVSNKDFSSIKSKVLFPHHSIFKFLKIPFNTEKINYEPTQRKILSKNIMFKNRNI
KKSIRYNK

>F1R TRANSLATE of: f3oct.seq check: 615 from: 303 to: 858
MNPHNVKYLAKILCLKTEILKNPYAIIISKDVVLRYNNTTIKYGDLVTYITVNIKLDATKTL
FQVFNESVVTYSPLENDYGFPPIIITSFLQGTGHNKFPINFLYIDIVASDLFPKRVRLTDEE
IVTVQSVLQIGDSKESLKLPKMLETEIAAKILFHKDIPLKIIRFFRNIIITGIEISDRAV
ITVLD

>F2L TRANSLATE of: f3oct.seq /rev check: 615 from: 855 to: 1272
MLDEDIYSFCDKNENDIRCGCLNPDSSIIKMGEEITRLPYWCWYEPCKRSDALIVKSLKKN
ISLCNISDCRVTLGNIKIKNGYIDVKNVCGTNSSTNEYIRTKYLNQEIIEEPIIHPIWLP
ISLFIITSLILITYIILLI

>F3R TRANSLATE of: f4oct.seq check: 2316 from: 1355 to: 5114
MAVISKVTYSLYNQEEINATDIFINHVKNDDDDVGTVDGRLGAMDGALCKTCGKTELQCF
GHWGKVRLYETHIKPEYIGEIVIRILNHICIRCGFLRSREPYIEDVTMSSHALRKLKDK
ILSKKKSCWNSKCMQQYQKITFSKKKVCVFNKSDDITIPNALIYQKITSIYKRFWPLLEI
HQKPENLFYKNFFPVPPFIIRPAISFWIDSIPKETNELTYLLGMIVKYCNMNADEQVIQK
AIIIEYDDIKIISNNTTSINLSYITSGKNMIRSYIVARRKDHNARSVIGPDITLTINEVG
VPFYIRNTLTKEIFVNPFITDEVQRLFTNNEIKFYFNKRLNQLTRIKQGFINKIHMPLP
GDWVEVPLKENTSIFGRQPSLHRYNVIASVTKYIEGDTIKIPPGIANSQNADFDGDEEW
MILEQNPKAVIEQSILMYPTLLKHDVNGSPVYGSIQDEIVAAYSFRMENLTLDEVMNL
LGKYGINFSSNGKTVFSGKDILEFLINDKVNYPGILSNGRIVANDIISDFIVAMRGMSLA
GFISDYKSNVEGIEFIIKSSYVFKRYLSIYGFVTFKELRPNSDFTNKLEAINSEKIELI
KNSYKKYLTVDKDGKILPLSKSMESDAVESMLSNLTNLNIKEIEEYMKTTLINNPDNNLL
KMAKAGYKVNPTELMYILGTYGQQRIDGEPTETRVMGRVLPYYLPDSKDPREGYIILNSL
TQGLTGSQYFMSLVARSQSTDIVCETSRTGTLARKIKKMEDMVVDGYGQVIYGNILIK
YAANYTKISASVCKPIDLIFPRESMVWYFEISSIWEKIKDGFISYQKQKISKKTLSPFNF
LVFLEPSDEKHAISSKDLYDMIQNVIDDVSEKYFFTISIDFIKYVFLTHLNPSIIRITK
ETATTIFKKFYEKLNYSLGGGTPIGIIAAQVLSEKFTQOALSSFHTTEKSGAIKHKLGFN
EFNNLTNLSKNKTELISED IENLQSVKINFEFVCLGELNPDIVLNNNDNEKYIIDITINRI
YIKRADITELVVEHMIERFVSPSVLVKWEGLETHIEDNMMIKFTILLVIFIEPEELSLNK
MMVLPGAANKGKISKFKIPIISNYNYDDHNKSRKMMNKLTVELMNLKELGTFNLECNISW
YMEYTDYIWRYSRYSYLCEALIKYIREGFRLFDHPCDLLASLICMSYEPESVKNKFKFGVT
SSLKATFGDNKALLNAALHKKTEPVNDNSSCHFFSKVPKIGTGYYRYFVNLE

>F4L TRANSLATE of: f3oct.seq /rev check: 615 from: 5097 to: 5712
MDKKSLEYENVLLKSTGSLPKAKAPTKMMRVTDVYVYLGNYDDAINAIISSNVNFKYIILNLT
EKYCFNDSRINIIMPLIDDEKTNLNDHFDYVTNFLSKCDEEHYPVLVHCVAGVNRSGAM
IMAYLMSKRKSDIPAFIYFLYIYHSMREKRGAFIENPSFRKQLIDKYIINELKVKTRRIF
QLILLSDIVTESFFSNLVSYSLTK

>F5R TRANSLATE of: f3oct.seq check: 615 from: 5728 to: 6299
MDKTTLVNNGVELEYAREKENKTIQSAKTSTLCFFMLILGISILLWFQVSDNSIFSELM
KYIRIKKSIRGWRPLVETKTNLESDRGKMLSMGRDEYFSPNCVDFGSYFVPIRLDRKTF
PQAIRRGKGDGWMVQKADKIDVSAQQFCQYLIKHXSENIITCGTHMINEIGYSGYFTNSH
WCSDFHNLN

>F6L TRANSLATE of: f3oct.seq /rev check: 615 from: 6300 to: 7269
MADIPLYVIPIVGREISDVVPELKSNDNIFYKKVDTVKDFKNSDVNFFFKDKDISLSYK
FLIWEKVEKSGGVENFTEYFSGLCNALCTKEAKSSIVKHFSWLSYADADIKNSENKFIV
VIEDNTLKDILTIHNIIEMQEKNIDIFQLRETFHNSNSRILFNQENNNFMYSLTRGGY
DFTLSAYVIRLSSAIKIINEIKKNGFSTSLSFEMYKLEKELKLNQVLDSSKYILHNT



>G7R TRANSLATE of: g16nov.seq check: 7938 from: 6468 to: 6774
MEEVIICNCQLPEMKNSSYEIFLINPFVIKNNTDIFKNLILRSSINYFIFDNYAPQKKIL
THIYPSFNIEKTYIYINFNEINNIKI IKKCYHRNKIRALCVV

>G8R TRANSLATE of: g16nov.seq check: 1719 from: 6852 to: 7505
MKTIKTKSFPYCI EYHDDWEAVINQLVDLYDEIAEWILKDETSPIPENFFKQLQNPLNDK
LVCICGIDPYPRDATGVPPFESP NFSKKTIKSIAETISNITGISNYKGYNLNNVKGVPWN
YYLSCKIGETKSHSLHWKKISKLLLQHITKYVNI FDCLGKTDFSNIKSIIEVPVTTIIGY
HPAARDRQFSKDKSFEAINILLEINGKEI IHWEEGFCY

>G9R TRANSLATE of: g16nov.seq check: 1719 from: 7550 to: 7799
MAGHLVNN EYIFVLKKIGVHTSHRESEDPRFVDIFTCEEL ENYILKNPTCTLFETLRDEE
AYSVVRVFFDVLDL DIVLDEIDYT

5.4 REFERENCES

- 1 ABI PRISM™ Dye Terminator Cycle Sequencing Ready Reaction Kit. August 1995. Protocol Revision A. (Perkin Elmer)
- 2 Adelaar, T. F. and Neitz, W. O. 1948. Knopvelsiekte. Onderstepoort. (In the Press) cited by Henning, M. W. 1949. In *Knopvelsiekte, Lumpy-skin disease. Animal Diseases in Africa*, 2nd Ed. Central News Agency, Ltd. South Africa.
- 3 Ahn, B. Y., Jones, E. V., and Moss, B. 1990. Identification of the vaccinia virus gene encoding an 18-kilodalton subunit of RNA polymerase and demonstration of a 5' poly(A) leader on its early transcript. *J. Virol.* **64**, 3019-3024.
- 4 Ahuja, S. K., Gao, J. L., and Murphy, P. M. 1991. Chemokine receptors and molecular mimicry. *Immunol. Today* **15**(6), 281-287.
- 5 Ahuja, S. K., and Murphy, P. M. 1993. Molecular piracy of mammalian interleukin-8 receptor type B by herpesvirus saimiri. *J. Biol. Chem.* **268**, 20691-20694.
- 6 Alcami, A., and Smith, G. L. 1992. A soluble receptor for interleukin-1 beta encoded by vaccinia virus: a novel mechanism of virus modulation of the host response. *Cell* **71**, 253-176.
- 7 Alexander, R. A., Plowright, W., and Haig, D. A. 1957. Cytopathic agents associated with lumpy skin disease in cattle. *Bull. Epizoot. Dis. Afr.* **5**, 489-492.
- 8 Alexander, R. A. and Weiss, K. E. 1959. Unpublished observations, cited in *Lumpy Skin Disease. Virus Monographs*. Vol 3. New York: Springer Verlag.
- 9 Afonso, C. L., Tulman, E. R., Lu, Z. *et al.* 1999. The Genome of *Melanoplus sanguinipes* Entomopoxvirus. *Virology*. **Jan**, 533-552.
- 10 Afonso, C. L., Tulman, E. R., Lu, Z., Zsak, L., Kutish, G. F., and Rock, D. L. 2000. The Genome of Fowlpox Virus. *Journal of Virology*. **Apr**. 3815-3831.
- 11 Anonymous: 1988, Lumpy Skin Disease, vol I, no 1. O.I.E., Disease Information, Paris, France.

- 12 Antoine, G., Scheiflinger, F., Dörner, F., and Falkner, F. G. 1998. The complete genomic sequence of the modified vaccinia Ankara strain: Comparison with other orthopoxviruses. *Virology* **244**, 365-396.
- 13 Archard, L. C. 1979. De novo synthesis of two classes of DNA induced by vaccinia virus infection of HeLa cells. *J. Gen. Virol.* **42**, 223-229.
- 14 Archard, L. C. 1983. Synthesis of full-length, virus genomic DNA by nuclei of vaccinia-infected HeLa cells. *J. Gen. Virol.* **64**, 2561-2575.
- 15 Arita, I. and Fenner, F. 1985. In: Vaccinia viruses as vectors for vaccine antigens (Ed. G. V. Quinnan) Elsevier, New York: 49-60.
- 16 Axton, J. M., Shamanski, F. L., Young, L. M., Henderson, D. S., Boyd, J. B. and Orr-Weaver, T. L. 1994. The inhibitor of DNA replication encoded by the *Drosophila* gene plutonium is a small, ankyrin repeat protein. *EMBO J.* **13**, 462-470.
- 17 Baldick, C. J., Keck, J. G., and Moss, B. 1992. Mutation analysis of the core, spacer, and initiation regions of vaccinia virus intermediate-class promoters. *J. virol.* **67**, 3515-3527.
- 18 Bankier, A. T., Beck, S., Bohni, R., Brown, C. M., Cerny, R., Chee, M. S., Hutchison, C. A. D., Kouzarides, T., Martignetti, J. A., Preddie, E. *et al.* 1991. The DNA sequence of the human cytomegalovirus genome. *DNA seq.* **2**, 1-12.
- 19 Bardwell, V. J. and Treisman, R. 1994. The POZ domain: a conserved protein-protein interaction motif. *Genes Dev.* **8**, 1664-1677.
- 20 Barinaga, M. 1999. A new finger on the protein destruction button. *Science* **286**, 223-225.
- 21 Baroudy, B. M. and Moss, B. 1980. Purification and characterization of a DNA-dependent RNA polymerase from vaccinia virus. *J. Biol. Chem.* **255**, 4372-4380.
- 22 Baroudy, B. M., Venkatesan, S., and Moss, B. 1982. Incompletely base-paired flip-flop terminal loops link the two DNA strands of the vaccinia virus genome into one uninterrupted polynucleotide chain. *Cell* **28**, 315-324.
- 23 Baroudy, B. M., Venkatesan, S., and Moss, B. 1983. Structure and replication of vaccinia virus telomeres. *Cold Spring Harbour Symp. Quant. Biol.* **47**, 723.

- 24 Bateman, A. J. 1975. Simplification of palindromic telomere theory. *Nature* **253**, 379-380.
- 25 Bauer, W. R., Ressner, E. C., Kates, J., and Patzke, J. 1977. A DNA nicking-closing enzyme encapsidated in vaccinia virus: partial purification and properties. *Proc. Natl. Acad. Sci. USA.* **74**, 1841-1845.
- 26 Baxby, D. in *Textbook of Human Virology Second Edition* (Ed. Belshe, R. B) Mosby Year Book, 1991.
- 27 Beattie, E., Tartaglia, J. and Paoletti, EC. 1991. Vaccinia virus-encoded eIF-2 alpha homolog abrogates the antiviral effect of interferon. *Virology* **183**, 419-422.
- 28 Ben-Baruch, A., Michiel, D. F., and Oppenheim, J. J. 1995. Signals and receptors involved in recruitment of inflammatory cells. *J. Biol. Chem.* **270**, 11703-11706.
- 29 Benson, D. A., Karsch-Mizrahi, I., Lipman, D. J., Ostell, J., Rapp, B. A., and Wheeler, D. L. 2000. Genbank. *Nucleic Acids Res.* **28(1)**, 15-18.
- 30 Berns, K. I. and Silverman, C. 1970. natural occurrence of cross-linked vaccinia virus deoxyribonucleic acid. *J. Virol.* **5**, 299-304.
- 31 Bertholet, C., Stocco, P., Van Meir, E., and Wittek, R. 1986. Functional analysis of a vaccinia virus late gene. *EMBO J.* **5**, 1951.
- 32 Bertholet, C., Van Meir, E., ten Heggeler-Bordier, B., and Wittek, R. 1987. Vaccinia virus produces late mRNAs by discontinuous synthesis. *Cell* **50**, 153-162.
- 33 Beuken, E., Vink, C., and Bruggeman, C. A. 1998. One-step procedure for screening recombinant plasmids by size. *BioTechniques* **24**, 748-750.
- 34 Black, D. N., Hammond, J. M., and Kitching, R. P. 1986. Genomic relationship between capripoxviruses. *Virus Research* **5**, 277-292.
- 35 Blake, N. W., Porter, C. D., and Archard, L. C. 1991. Characterization of a molluscum contagiosum virus homolog of the vaccinia virus p37K major envelope antigen. *J. virol.* **65**. 3583-3589.

- 36 Bloom, D. C., Edwards, K. M., Hager, C. and Moyer, R. W. 1991. Identification and Characterization of the Rabbitpox Virus Genome involved in Virulence. *Journal of Virology* **Mar.**, 1530-1542.
- 37 Boone, R. F. and Moss, B. 1977. Methylated 5'- terminal sequences of vaccinia virus mRNA species made in vivo at early and late times after infection. *Virology* **79**, 67-80.
- 38 Boone, R. F., Ensinger, M. J., and Moss, B. 1977. Synthesis of mRNA guanylyltransferase and mRNA methyltransferases in cells infected with vaccinia virus. *J. Virol.* **21**, 475-483.
- 39 Boone, R. F. and Moss, B. 1978. Sequence complexity and relative abundance of vaccinia virus mRNA's synthesized *in vivo* and *in vitro*. *J. Virol.* **26**, 554-569.
- 40 Bork, P. 1993. Hundreds of ankyrin-like repeats in functionally diverse proteins: mobile modules that cross phyla horizontally? *Proteins.* **17**, 363-374.
- 41 Boyle, D. B. 1992. Quantitive assessment of poxvirus promoters in fowlpox and vaccinia virus recombinants. *Virus Genes* **6**, 281-290.
- 42 Breathnach, R. and Chambon, P. 1981. Organization and expression of eukaryotic split genes. *Annu. Rev. Biochem.* **50**, 349-383.
- 43 Breeden, L. and Nasmyth, K. 1987. Similarity between cell-cycle genes of budding yeast and fission yeast and the Notch gene of *Drosophila*. *Nature* **329**, 651-654.
- 44 Broyles, S. S. and Moss, B. 1987. Sedimentation of an RNA polymerase complex from vaccinia virus that specifically initiates and terminated transcription. *Mol. Cell. Biol.* **7**, 7-14.
- 45 Broyles, S. S. and Moss, B. 1986. Homology between RNA polymerases of poxviruses, prokaryotes and eukaryotes: nucleotide sequence and transcriptional analysis of vaccinia virus genes encoding 147-kDa and 22-kDa subunits. *Proc. Natl. Acad. Sci. USA.* **83**, 3141-3145.
- 46 Broyles, S. S., Yuen, L., Shuman, S., and Moss, B. Purification of a factor required for transcription of vaccinia virus early genes. *J. Biol. Chem.* **263**, 10754-10760.
- 47 Buller, R. M., Smith, G. L., Cremer, K., Notkins, A. L., and Moss, B. 1985. Decreased virulence of recombinant vaccinia virus expression vectors is associated with a thymidine kinase-negative phenotype. *Nature* **317**, 813-815.

- 48 Buller, R. M. L and Palumbo, G. J. 1991. Poxvirus pathogenesis. *J. Microbiol Rev.* **55**, 80-122.
- 49 Chang-Yeh, A., Jabs, E. W., Li, X., Dracopoli, N., and Huang, R. C. C. 1993. The IPP gene is assigned to human chromosome 1p32-1p22. *Genomics* **15**, 239-241.
- 50 Cairns, J. 1960. *Virology* **11**, 603.
- 51 Cameron, C., Hota-Mitchell, S., Chen, L. *et al.* 1999. The Complete DNA Sequence of Myxoma Virus. *Virology*. **264**, 298-318.
- 52 Cao, J. X., Gershon, P. D. and Black, D. N. 1995. Sequence Analysis of HindIII Q2 Fragment of Capripoxvirus Reveals a Putative Gene Encoding a G-Protein-Coupled Chemokine Receptor Homologue. *Virology* **209**, 207-212.
- 53 Caplan, H. S. and Holowczak, J. A. 1983. Some enzymatic activities associated with purified parapoxviruses. *J. Virol.* **46**, 384-393.
- 54 Capstick, P. B. 1959. Lumpy Skin Disease- experimental infection. *Bulletin of Epizootic Diseases of Africa.* **7**, 27-36.
- 55 Capstick, P. B. and Coakley, W. 1961. Protection of cattle against lumpy skin disease. Trials with a vaccine against Neethling type infection. *Res. Vet. Sci.* **2**, 362-368.
- 56 Carn, V. M. 1993. Control of capripoxvirus infections. *Vaccine* **11**, 1275-1279.
- 57 Chakrabarti, S., Brechling, K., and Moss, B. 1985. Vaccinia virus expression vector: Co-expression of β -galactosidase provides visual screening of recombinant virus plaques. *Mol. Cell Biol.* **5**, 3403-3409.
- 58 Chalberg, M. D. and Englund, P. T. 1979. Purification and properties of the deoxyribonucleic acid polymerase induced by vaccinia virus. *J. Biol. Chem.* **254**, 7812-7819.
- 59 Chang, A. and Metz, D. H. 1976. Further investigations on the mode of entry of vaccinia virus into cells. *J. Gen. Virol.* **32**, 275-282.

- 60 Chang, H., Watson, J. C., and Jacobs, B. L. 1992. The E3L gene of vaccinia virus encodes an inhibitor of the interferon-induced, double-stranded RNA-dependent protein kinase. *Proc. Natl. Acad. Sci. USA*. **89**, 4825-4829.
- 61 Chee, M. S., Satchwell, S. C., Preddie, E., Weston, K. M., and Barrell, B. G. 1990. Human cytomegalovirus encodes three G protein-coupled receptor homologues. *Nature* **344**, 774-777
- 62 Claverie, J. M. 1994. Some useful statistical properties of position-weight matrices. *Comp. Chem.* **18**, 287-294.
- 63 Coakley, W. and Capstick, P. B. 1961. Protection of cattle against lumpy skin disease. Factors affecting small scale production of tissue culture propagated virus vaccine. *Res. Vet. Sci.* **2**, 369-371.
- 64 Cochran, M. A., Puckett, C., and Moss, B. 1985. In vitro mutagenesis of the promoter region for a vaccinia virus gene: evidence for tandem early and late regulatory signals. *J. virol.* **54**, 30-37.
- 65 Cohen, S. N., A. C. Y., Chang, and Hsu, L. 1972. Nonchromosomal antibiotic resistance in bacteria: Genetic transformation of *Escherichia coli* by R-factor DNA. *Proc. Natl. Acad. Sci. USA.* **69**, 2110.
- 66 Cooper, J. A., Wittek, R., and Moss, B. 1981. Extension of the transcriptional and translational map of the left end of the vaccinia genome to 21 kilobase pairs. *J. Virol.* **39**, 733-745.
- 67 Coupar, B. E., Boyle, D. B., and Both, G. W. 1987. Effect of *in vitro* mutations in a vaccinia virus early promoter region monitored by herpes simplex virus thymidine kinase expression in recombinant vaccinia virus. *J. Gen Virol.* **68**, 2299-2309.
- 68 Cox, W. I., Tartaglia, J., and Paoletti, E. 1992. Poxvirus recombinants as live vaccines. In: Recombinant poxviruses. CRC Press, 405-418.
- 69 Cremer, M. A., Mackett, M., Wohlenberg, C., Notkins, A. L., and Moss, B. 1985. Vaccinia virus recombinant expressing herpes simplex type I glycoprotein D prevents latent herpes in mice. *Science* **228**, 737-739.
- 70 Dales, S. 1965. Penetration of animal viruses into cells. *Prog. Med. Virol.* **7**, 1-43.
- 71 Dales, S. and Kajioka, R. 1964. The cycle of multiplication of vaccinia virus in Earle's strain L cells. *Virology* **24**, 278-294.

- 72 Davies, F. G. 1980. The possible role of wildlife as maintenance hosts for some African insect-borne virus diseases. Proceedings of the workshop, *Wildlife Disease Research and Economic Development* (Eds. Karstad, L., Nestel, B., and Graham, N.)
- 73 Davies, M., Elroy-Stein, O., Jagus, R., Moss, B., and Kaufman, R. J. 1992. The vaccinia virus K3L gene product potentiates translation by inhibiting double-stranded-RNA-activated protein kinase and phosphorylation of the alpha subunit of eukaryotic initiation factor 2. *J. Virol.* **66**, 749-769.
- 74 Dales, S. and Siminovitch, L. 1961. The development of vaccinia virus in Earle's L strain cells as examined by electron microscopy. *J. Biophys. Biochem. Cytol.* **10**, 475-503.
- 75 Davies, F. G. 1982. Observations on the epidemiology of lumpy skin disease in Kenya. *J. Hyg. Camb.* **88**, 95-102.
- 76 Davies, F. G., and Otema, C. 1981. Relationships of capripox viruses found in Kenya with two Middle Eastern strains and some orthopoxviruses. *Res. Vet. Sci.* **12**, 123-127.
- 77 Davis, R. E., and Mathews, C. K. 1993. Acidic C terminus of vaccinia virus DNA-binding protein interacts with ribonucleotide reductase. *Proc. Natl. Acad. Sci. USA* **90**, 745-749.
- 78 Davison, A. J., and Moss, B. 1989a. The structure of vaccinia virus early promoters. *J. Mol. Biol.* **210**, 749-769.
- 79 Davison, A. J., and Moss, B. 1989b. The structure of vaccinia virus late promoters. *J. Mol. Biol.* **210**, 771-784.
- 80 Davison, A. J., and Moss, B. 1990. New vaccinia virus recombination plasmids incorporating a synthetic late promoter for high level expression of foreign proteins. *Nucleic Acids Res.* **18**, 4285-4286.
- 81 Dawson, M. J., and Trapani, J. A. 1995. The interferon-inducible autoantigen, IFI 16: Localization to the nucleolus and identification of a DNA-binding domain. *Biochem. Biophys. Res. Commun.* **214**, 152-162.
- 82 Dawson, M. J., and Trapani, J. A. 1996. HIN-200: A novel family of IFN-inducible nuclear proteins expressed in leukocytes. *J. Leukocyte Biol.* **60**, 310-316.

- 83 De Lange, A. M. 1989. Identification of temperature-sensitive mutants of vaccinia virus that are defective in conversion of concatameric replicative intermediates to the mature linear DNA genome. *J. Virol.* **63**, 2437-2444.
- 84 deMagistris, L. and Stunnenberg, H. G. 1988. Cis-acting sequences affecting the length of the poly (A) head of vaccinia virus late transcripts. *Nucleic Acids Res.* **16**, 3141-3156.
- 85 De Nadal, E., Clotet, J., Posas, F., Serrano, R., Gomez, N., and Arino, J. 1998. The yeast halotolerance determinant Hal3p is an inhibitory subunit of the Ppz1p Ser/Thr protein phosphatase. *Proc. Natl. Acad. Sci. USA.* **95**, 7357-7362.
- 86 Diesel, A. M. 1949. *Proc. XIVth Int. Vet. Cong.*
- 87 Easterbrook, K. B. 1966. Controlled degradation of vaccinia virions *in vitro*: an electron microscopic study. *J. Ultrastruc. Res.* **14**, 484-496.
- 88 Epstein, L. B. 1984. The special significance of interferon-gamma. In "Interferon" (J. Vilcek and E. deMaeyer, Eds) pp. 185-220, Elsevier, Amsterdam.
- 89 Eppstein, D. A., Marsh, Y. V., Scriber, A. B., Newman, S. R., Todaro, G. J., and Nestor, J. J. 1985. Epidermal growth factor receptor occupancy inhibits vaccinia virus infection. *Nature* **266**, 550-552.
- 90 Esposito, J. J. and Knight, J. C. 1985. Orthopox DNA: a comparison of restriction profiles and maps. *Virology* **143**, 230-251.
- 91 Esposito, J. J. in *Classification and Nomenclature of Viruses Arch. Virol. Suppl.* 2 (eds Francki, R. I. B. *et al.*) 91-102 (Springer, New York, 1991)
- 92 Esteban, M., Flores, L., and Holowczak, J. A. 1977. Model for vaccinia virus DNA replication. *Virology* **83**, 467-473.
- 93 Esteban, M. and Holowczak, J. A. 1977. Replication of vaccinia DNA in mouse L cells. In vivo DNA synthesis. *Virology* **78**, 57-75.
- 94 FAO. 1985. FAO-WHO-OIE Animal Health Yearbook 1985. (Ed. V. Kouba)

- 95 Farrar, M. A. and Schreiber, R. D. 1993. The molecular cell biology of interferon- γ and its receptor. *Annu. Rev. Immunol.* **11**, 571-611.
- 96 Federspiel, B., Melhado, I., Duncan, A. M., Delaney, A. D., Schappert, K. T., Clark Lewis, I., and Jirik, F. 1993. Molecular cloning of the cDNA and chromosomal localization of the gene for a putative seven-transmembrane segment (7-TMS) receptor isolated from human spleen. *Genomics* **16**, 707- 712.
- 97 Fenner, F. and Ratcliffe, F. N. 1965. "Myxomatosis". Cambridge University Press, Cambridge, UK.
- 98 Fenner, F. 1979. Portraits of viruses: The poxviruses. *Intervirology* **11**, 137-157.
- 99 Fenner, F. 1983. Biological control, as exemplified by smallpox eradication and myxomatosis. *Proc. R. Soc. Lond.* **218**, 259-285.
- 100 Fenner, F. *et al.* *Smallpox and its Eradication* (World Health Organization, Geneva, 1988)
- 101 Fenner, F., Wittek, R. and Dumbell, K. *The Orthopoxviruses* (Academic, San Diego, 1989).
- 102 Fick, W C., and Viljoen, G. J. 1994. Early and late transcriptional phases in the replication of lumpy skin virus. *Onderstepoort J. Vet. Res.* **61**, 255-261.
- 103 Fick, W. C., and Viljoen, G. J. 1999. Identification and characterisation of an early/late bi-directional promoter of the capripoxvirus, lumpy skin disease virus; Brief Report. *Arch. Virol.* **144**, 1229-1239.
- 104 Fogelson, P. D. and Bauer, W. R. 1984. Effects of ATP and inhibitory factors on the activity of vaccinia virus type I topoisomerase. *J. Virol.* **49**, 1-8.
- 105 Francki, R. I. B., Fauquet, C. M., Knudson, D. L., and Brown, F. 1991. *Arch Virol.* Suppl. 2.
- 106 Gafford, L. G. and Randall, C. C. 1976. Virus-specific RNA and DNA in nuclei of cells infected with fowlpox virus. *Virology* **69**, 1.
- 107 Garon, C. F., Barbosa, E., and Moss, B. 1978. Visualization of an inverted terminal repetition in vaccinia virus DNA. *Proc. Natl. Acad. Sci. USA* **75**, 4863-4867.
- 108 Gershon, P. D, Ansell, D. M. and Black, D. N. 1989. A Comparison of the Genome Organization of Capripoxvirus with That of the Orthopoxviruses. *Journal of Virology.* **Nov**, 4703-4708.

- 109 Gershon, P. D. and Black, D. N. 1988. A comparison of the genomes of capripoxvirus isolates of sheep, goats and cattle. *Virology* **164**, 341-349.
- 110 Gershon, P. D. and Black, D. N. 1989. The nucleotide sequence around the capripoxvirus thymidine kinase gene reveals a gene shared specifically with leporipoxvirus. *J. gen. Virol.* **70**, 525-533.
- 111 Gershon, P. D. and Black, D. N. 1989. A Capripoxvirus Pseudogene Whose Only Intact Homologs Are In Other Poxvirus Genomes. *Virology* **172**, 350-354.
- 112 Gershon, P. D. and Black, D. N. 1987. Physical Characterization of the Genome of a Cattle Isolate of Capripoxvirus. *Virology* **160**, 473-476.
- 113 Gershon, P. D., and Moss, B. 1990. Early transcription factor subunits are encoded by vaccinia virus late genes. *Proc. Natl. Acad. Sci. USA.* **87**, 4401-4405.
- 114 Gillard, S., Spehner, D., Drillien, R., and Kirm, A. 1986. Localization and sequence of a vaccinia virus gene required for multiplication in human cells. *Proc. Natl. Acad. Sci. USA.* **83**, 5573-5577.
- 115 Goebel, S. J., Johnson, G. P., Perkus, M. E., *et al.* 1990. The Complete Sequence of Vaccinia Virus. *Virology* **179**, 247-266.
- 116 Golini, F. and Kates, J. R. 1985. A soluble transcription system derived from purified vaccinia virions. *J. Virol.* **53**, 205-213.
- 117 Gooding, L. R. 1992. Virus proteins that counteract host immune defences. *Cell* **71**, 5-7.
- 118 Gorina, S. and Pavletich, N. P. 1996. Structure of the p53 tumor suppressor bound to the ankyrin and SH3 domains of 53BP2. *Science* **274**, 1001-1005.
- 119 Graham, K. A., Opgenorth, A., Upton, C., and McFadden, G. 1992. Myxoma virus M11L ORF encodes a protein for which cell surface localization is critical for manifestation of viral virulence. *Virology* **191**, 112-124.
- 120 Graham, K. A., Lalani, A. S., Macen, J., Ness, T. L., Barry, M., Liu, L., Lucas, A., Clarke-Lewis, I., Moyer, R. W., and McFadden, G. 1997. The T1/35kDa family of poxvirus-secreted proteins bind chemokines and modulate leukocyte influx into virus-infected tissues. *Virology* **229**, 12-24.

- 121 Guan, K., and Dixon, J. E. 1991. Evidence for protein-tyrosine-phosphatase catalysis proceeding via a cysteine-phosphate intermediate. *J. Biol. Chem.* **266**, 17026-17030.
- 122 Haig, D. A. 1957. Lumpy Skin Disease. *Bull. Epizoot. Dis. Afr.* **5**, 421-430.
- 123 Hänggi, M., Bannwarth, W., and Stunnenberg, H. G. 1986. Conserved TAAAT motif in vaccinia virus late promoters: overlapping TATA box and site of transcription initiation. *EMBO J* **5**, 1071-1076.
- 124 Harper, D. R. in *Molecular Virology, Second Edition*. BIOS Scientific Publishers Limited, 1998.
- 125 Hedger, R. S., and Hamblin, C. 1983. Neutralising antibodies to lumpy skin disease virus in African wildlife. *Comp. Immun. Microbiol. Infect. Dis.* Vol 6 No. 3, 209-213.
- 126 Heine, H. G., Stevens, M. P., Foord, A. J., and Boyle, D. B. 1999. A capripox detection PCR and antibody ELISA based on the major antigen P32, the homolog of the vaccinia virus H3L gene. *J. Immunol. Methods* **227**, 187-196.
- 127 Hendricks, S. P., and Matthews, C. K. 1998. Allosteric regulation of vaccinia virus ribonucleotide reductase, analysed by simultaneous monitoring of its four activities. *J. Biol. Chem.* **273**, 29512-29518.
- 128 Henning, M. W. 1949. In *Knopvelsiekte, Lumpy-skin disease. Animal Diseases in Africa*, 2nd Ed. Central News Agency, Ltd. South Africa.
- 129 Hernandez, M. C., Andres-Barquin, P. J., Martinez, S., Bulfone, A., Rubenstein, J. L. R., and Israel, M. A. 1997. ENC-1: a novel mammalian Kelch-related gene specifically expressed in the nervous system encodes an actin-binding protein. *J. Neurosci.* **17**, 3038-3051.
- 130 Hiller, G., Jungwith, C., and Weber, K. 1981. Fluorescence microscopical analysis of the life cycle of vaccinia virus in chick embryo fibroblasts. *Exp. Cell Res.* **132**, 81-87.
- 131 Hiller, G. and Weber, K. 1985. Golgi-derived membranes that contain an acylated viral polypeptide are used for vaccinia virus envelopment. *J. Virol.* **55**, 651-659.
- 132 Hirschmann, P., Vos, J. C., and Stunnenberg, H. G. 1990. Mutational analysis of a vaccinia virus intermediate promoter in vivo and in vitro. *J. Virol.* **Dec**, 6063-6069.

- 133 Holmes, W. E., Lee, J., Kuang, W. J., Rice, G. C., and Wood, W. I. 1991. Structure and functional expression of a human interleukin-8 receptor. *Science* **253**, 1278-1280.
- 134 Holowczak, J. A. 1983. In *Replication of Viral and Cellular Genomes* (Ed. Y Becker) p202. The Hague, Nijhoff.
- 135 Hopkins, D. R. 1983. *Princes and Peasants: Smallpox in History*. Chicago, University of Chicago Press.
- 136 House, J. A., Terrance, M., Wilson, S. E. N., Ikram, A., Karim, I. I., Danaf, N. E., Moussa, A. M., and Ayoub, N. N. 1990. The isolation of lumpy skin disease virus and bovine herpesvirus-4 from cattle in Egypt. *J. Vet. Invest* **2**, 111-115.
- 137 Hruby, D. E. and Ball, L. A. 1982. Mapping and identification of the vaccinia virus thymidine kinase gene. *J. Virol.* **40**, 456-464.
- 138 Hruby, D. E., Lynn, D. L., and Kates, J. R. 1979. Vaccinia virus replication requires active participation of the host cell transcriptional apparatus. *Proc. Natl. Acad. Sci. USA* **76**, 1887.
- 139 Huang and Miller. 1991. *Adv. Appl. Math.* **12**, 337-357.
- 140 Jackson, R. J. and Bults, G. H. 1990. A myxoma virus nucleotide sequence with homology to the vaccinia virus RNA polymerase 22-kDa subunit gene. *Nucleic Acids Res.* **18**, 5290-5290.
- 141 Jackson, R. J., Hull, D. F., and Kerr, P. J. 1999. Myxoma virus encodes an alpha2,3-sialyltransferase that enhances virulence. *J. virol.* **73**, 2367-2384.
- 142 Jenner, E. 1798. *An inquiry into the causes of the variolae vaccinae, a disease known by the name of cow pox*. Sampson Low No 7, Soho, London.
- 143 Johnson, G. P., Goebel, S. J., and Paoletti, E. 1993. An update on the vaccinia virus genome. *Virology* **196**, 381-401.
- 144 Johnstone, R. W., Kerry, J. A., and Trapani, J. A. 1998. The human interferon-inducible protein, IFI 16, is a repressor of transcription. *J. Biol. Chem.* **273**, 17172-17177.
- 145 Joklik, W. K. 1964. *J. Molec. Biol.* **8**, 263.

- 146 Jones, D. T., Taylor, W. R., and Thornton, J. M. 1994. A model recognition approach to the prediction of all-helical membrane protein structure. *Biochemistry* **33**, 3038-3049.
- 147 Jordan, A., and Reichard, P. 1998. Ribonucleotide reductases. *Annu. Rev. Biochem.* **67**, 71-98.
- 148 Jungwith, C. and Dawid, I. B. 1967. Vaccinia DNA: separation of viral from host cell DNA. *Arch. Virol.* **20**, 464-468.
- 149 Karupiah, G., Fredrickson, T. N., Holmes, K. L., Khairallah, L. H., and Buller, R. M. L. 1993. Importance of interferons in recovery from mousepox. *J. Virol.* **67**, 4214-4226.
- 150 Kates, J. and Beeson, J. 1970. Ribonucleic acid synthesis in vaccinia virus. II. Synthesis of polyribonucleic acid. *J. Molec. Biol.* **50**, 19-33.
- 151 Kates, J. R and McAuslan, B. R. 1967. Poxvirus DNA-dependent RNA polymerase. *Proc. Natl. Acad. Sci. USA.* **57**, 314.
- 152 Kaverin, N. V., Varich, N. L., Surgay, V. V., and Chernos, V. I. 1975. A quantitative estimation of poxvirus genome fraction transcribed as early and late mRNA. *Virology* **65**, 112-119.
- 153 Keck, J. G., Baldick, C. J., and Moss, B. 1990. Role of DNA replication in vaccinia virus gene expression: A naked template is required for transcription of three late transactivator genes. *Cell*, **61**, 801-809.
- 154 Kelvin, D. J., Michiel, D. F., Johnston, J. A., Lloyd, A. R., Sprenger, H., Oppenheim, J. J., and Wang, J. M. 1993. Chemokines and Serpentine- The molecular biology of chemokine receptors. *J. Leucocyte Biol.* **54**, 604-612.
- 155 Kerr, P. J. and Best, S. M. 1998. Myxoma virus in rabbits. *Rev. Sci. Tech.* **17**, 256-268.
- 156 Kim, T. A., Lim, J., Ota, S., Raja, S., Rogers, R., Rivnay, B., Avraham, H., and Avraham, S. 1998. NRP/B, a novel nuclear matrix protein, associates with p110(RB) and is involved in neuronal differentiation. *J. Cell. Biol.* **141**, 553-566.

- 157 King, C. S., Cooper, J. A., Moss, B., and Twardzik, D. R. 1986. Vaccinia virus growth factor stimulates tyrosine protein kinase activity of A431 cell epidermal growth factor receptors. *Mol. Cell. Biol.* **6**, 332-336.
- 158 Kim, I. F., Mohammadi, E., and Huang, R. C. C. 1999. Isolation and characterization of IPP, a novel human gene encoding an actin-binding, kelch-like protein. *Gene* **228**, 73-83.
- 159 Kitching, R. P. 1983. Progress towards sheep and goat pox vaccines. *Vaccine* **1**, 4-9.
- 160 Kitching, R. P., McGrane, J. J., and Taylor, W. P. 1986. Capripox in the Yemen Arab Republic and the Sultanate of Oman. *Trop. Anim. Hlth. Prod.* **18**, 115-122.
- 161 Kitching, R. P., Hammond, J. M., and Taylor, W. P. 1987. A single vaccine for the control of capripox infection in sheep and goats. *Res. Vet. Sci.* **42**, 53-60.
- 162 Kitching, R. P and Smale, C. 1986. Comparison of the external dimensions of capripoxvirus isolates. *Res. Vet. Sci.* **41**, 424-427.
- 163 Kitching, R. P. 1986. Passive protection of sheep against capripoxvirus. *Res. Vet. Sci.* **41**, 247-250.
- 164 Kitching, R. P., Bhat, P. P., and Black, D.N. 1989. The characterization of African strains of capripoxvirus. *Epidem. Inf.* **102**, 335-343.
- 165 Kleiman, J. H. and Moss, B. 1975. Purification of a protein kinase and two phosphate acceptor proteins from vaccinia virions. *J. Biol. Chem.* **250**, 2420-2429.
- 166 Kleiman, J. H. and Moss, B. 1975. Purification of a protein kinase and two phosphate acceptor proteins from vaccinia virions. *J. Biol. Chem.* **250**, 2430-2437.
- 167 Kohonen-Corish, M. R. J., King, N. J. C., Wookhams, C. E. and Ramshaw, I. 1990. Immunodeficient mice recover from infection with vaccinia virus expressing interferon- γ . *Eur. J. Immunol.* **20**, 157-161.
- 168 Koonin, E. V., Senkevich, T. G., and Chernos, V. I. 1992. A family of DNA virus genes that consist of fused portions of unrelated cellular genes. *Trends Biochem. Sci.* **17**, 213-214.

- 169 Kotwal, G., Isaacs, S. N., McKensie, R., Frank, M. M., and Moss, B. 1990. Inhibition of the complement cascade by the major secretory protein of vaccinia virus. *Science* **250**, 827-830.
- 170 Kotwal, G., and Moss, B. 1988. Vaccinia virus encodes a secretory polypeptide structurally related to complement control proteins. *Nature* **335**, 176-181.
- 171 Kumar, S., and Boyle, D. B. 1990a. A poxvirus bi-directional promoter element with early/late and late functions. *Virology* **179**, 151-158.
- 172 Kumar, S., and Boyle, D. B. 1990b. Activity of a fowlpox late gene promoter in vaccinia and fowlpox virus recombinants. *Arch Virol.* **112**, 139-148.
- 173 laColla, P. and Weissbach, A. 1975. Vaccinia virus infection of HeLa cells. I. Synthesis of vaccinia DNA in host cell nuclei. *J. Virol.* **15**, 305-315.
- 174 Lane, J. M. and Millar, J. D. 1971. Risk of small pox vaccination complications in the United States. *American J. Epidem.* **93**, 238-243.
- 175 Lakritz, N., Foglesong, P. D., Reddy, M. *et al.* 1985. A vaccinia virus DNase preparation which cross-links superhelical DNA. *J. Virol.* **53**, 935.
- 176 Law, S. K. A. and Reid, K. B. M. 1988. In Male, D. K. (Ed.) *Complement*. (In Focus Series,) IRL, Oxford.
- 177 Lloyd, A., Notredame, C., Hide, W., Joubert, F., and Kelso, J. *Sequence Analysis for South African Scientists*, SANBI course notes, University of Pretoria, Nov. 1999.
- 178 Lee-Chen, G. J., Bourgeois, N., Davison, K., Condit, R. C., and Niles, E. G. 1988. Structure of the transcription initiation and termination sequences of seven early genes in the vaccinia virus *HindIII* D fragment. *Virology* **163**, 64-79.
- 179 Luftig, R. B. 1982. Does the cytoskeleton play a significant role in virus replication? *J. Theor. Biol.* **99**, 173-191.
- 180 Luo, Y., and Shuman, S. 1991. Antitermination of vaccinia virus early transcription: Possible role of RNA secondary structure. *Virology* **185**, 432-436.

- 181 Lux, S. E., John, K. M., and Bennett, V. 1990. Analysis of cDNA for human erythrocyte ankyrin indicates a repeated structure with homology to tissue-differentiation and cell-cycle control proteins. *Nature* **344**, 36-42.
- 182 MacDonald, R. A. S. 1931. Pseudo-urticaria of cattle. *Dept. Animal Health, Gov. N. Rhodesia. Newsletter, March 21, 1945*, 1-4.
- 183 Mackett, M., Smith, G. L., and Moss, B. 1982. Vaccinia virus: a selectable eukaryotic cloning and expression vector. *Proc. Natl. Acad. Sci. USA* **79**, 7415-7419.
- 184 Mackett, M., Yilma, T. Y., Rose, J. A. and Moss, B. 1985. Vaccinia virus recombinants express vesicular stomatitis virus genes and protectively immunize mice and cattle. *Science* **227**, 433-435.
- 185 MacDonald, R. A. S. 1931. Pseudo-urticaria of cattle. *Northern Rhodesia Department of Animal Health, Annual Report 1930*. pp 20-21.
- 186 MacOwan, K. D. S., 1959. Observations on the Epizootiology of Lumpy Skin Disease during the first year of its occurrence in Kenya. *Bull. Epiz. Diz. Afr.* **7**, 2-20.
- 187 Mahr, A. and Roberts, B. E. 1984. Arrangement of late RNAs transcribed from a 7.1-kilobase EcoRI vaccinia virus DNA fragment. *J. Virol.* **49**, 510-520.
- 188 Mars, M. and Beaud, G. 1987. Characterization of vaccinia virus early promoters and evaluation of their information content. *J. Mol. Biol.* **198**, 619-631.
- 189 Marsh, Y. V. and Eppstein, D. A. 1987. Vaccinia virus and the EGF receptor: a portal of entry for infectivity? *J. Cell. Biochem.* **34**, 239-245.
- 190 Massung, R. F., Esposito, J. J., Liu, L., Qi, J., Utterback, T. R., Knight, J. C., Aubin, L., Yuran, T. E., Parsons, J. M., Loparev, V. N., Selivanov, N. A., Cavallaro, K. F., Kerlavage, A. R., Mahy, B.W.J. and Venter, J. C. 1993a. Potential virulence determinants in terminal regions of variola smallpox virus genome. *Nature* **366**, 748-751.
- 191 Massung, R. F., Jayarama, V., and Moyer, R. W. 1993b. DNA sequence analysis of conserved and unique regions of swinepox virus: identification of genetic elements supporting phenotypic observations including a novel G-protein coupled receptor homolog. *Virology* **197**, 511-528.

- 192 Massung, R. F., Liu, L. I., Qi, J., Knight, J. C., Yuran, T. E., Kerlavage, A. R., Parsons, J. M., Venter, J. C., and Esposito, J. J. 1994. Analysis of the complete strain of smallpox variola major virus strain Bangladesh-1975. *Virology* **201**, 215-240.
- 193 Massung, R. F. and Moyer, R. W. 1991b. The molecular biology of swinepox virus II. The infectious cycle. *Virology* **180**, 355-364
- 194 Matthews, R. E. F. 1982. Classification and nomenclature of viruses. *Intervirology*. **17**, 42-46.
- 195 Mattaj, I. W., and Englmeier, L. 1998. Nucleocytoplasmic transport: The soluble phase. *Annu. Rev. Biochem.* **67**, 265-306.
- 196 Maxam, A. M., and Gilbert, W. 1980. Sequencing end-labeled DNA with base-specific chemical cleavages. In "Methods in Enzymology" (Eds. L. Grossman and K. Moldave), Vol. 65, 499-560.
- 197 Medzon, E. L. and Bauer, H. 1970. Structural features of vaccinia virus revealed by negative staining. *Virology* **40**, 860-867.
- 198 Mercer, A.A., Lyttle, D. J, Whelan, E. M., *et al.* 1995. The Establishment of a Genetic Map of ORF Virus Reveals a Pattern of Genomic Organization That Is Highly Conserved among Divergent Poxviruses. *Virology* **212**, 698-704,
- 199 Merchlinsky, M., Garon, C., and Moss, B. 1988. Molecular cloning and sequence of the concatamer junction from vaccinia virus replicative DNA: viral nuclease cleavage sites in cruciform structures. *J. Mol. Biol.* **199**, 399-413.
- 200 Merck Veterinary Manual. 1986. Sheeppox and goatpox. *A handbook of Diagnosis, Therapy and Disease Prevention and Control for the Veterinarian*. Merck, Rahway, New Jersey. 799-800.
- 201 Michaely, P. and Bennett, V. 1992. *Trends Cell Biol.* **2**, 127-129.
- 202 Miller, G. 1957. *The Adoption of Inoculation of Smallpox in England and France*. Philadelphia, University of Pennsylvania Press.
- 203 Minnigan, H. and Moyer, R. W. 1985. Intracellular location of rabbit poxvirus nucleic acid with infected cells as determined by in situ hybridization. *J. Virol* **55**, 634.

- 204 Morgan, C. 1976. The insertion of DNA into vaccinia virus. *Science* **193**, 591-592.
- 205 Morgan, C. 1976. Vaccinia virus reexamined: development and release. *Virology* **73**, 43-58.
- 206 Morris, J. P. A. 1931. Pseudo-urticaria. *Northern Rhodesia Department of Animal Health, Annual Report 1930*. p 12.
- 207 Moss, B., Rosenblum, E. N., and Gershowitz, A. 1975. Characterization of a polyriboadenylate polymerase from vaccinia virions. *J. Biol. Chem.* **250**, 4722-4729.
- 208 Moss, B., Smith, G. L., Gerin, J. L., and Purcell, R. 1984. Live recombinant vaccinia virus protects chimpanzees against hepatitis B. *Nature* **311**, 67-69.
- 209 Moss, B. in *Concepts in Viral Pathogenesis II* (Eds. Notkins, A. L., and Oldstone, M. B. A.) Springer-Verlag, New York, 1986.
- 210 Moss, B. 1990. Regulation of vaccinia virus transcription. *Annual Reviews of Biochemistry* **9**, 661-688.
- 211 Moss, B. 1990. Regulation of the orthopoxvirus gene expression. *Curr. Top. Microbiol. Immun.* **163**, 41-71.
- 212 Moss, B. 1992. Molecular Biology of Poxviruses, in *Recombinant Poxviruses* (Eds. M. M. Binns and G. L. Smith). Boca Raton: CRC Press: 45-80.
- 213 Moss, B. 1985. In *Virology* (Ed. B. N. Fields). Raven Press, New York. 685-703.
- 214 Moss, B. 1990. In *Virology* (Eds. Fields, B. B., Knipe, D. M. *et al.*) Raven Press, Ltd., New York. 2079-2111.
- 215 Mossman, K., Upton, C., Buller, R. M. L., and McFadden, G. 1995. Species specificity of ectromelia virus and vaccinia virus interferon- γ binding proteins. *Virology* **208**, 762-769.
- 216 Mossman, K., Ostergaard, H., Upton, C., and McFadden, G. 1995. Myxoma Virus and Shope Fibroma Virus Encode Dual-Specificity Tyrosine/Serine Phosphatases Which Are Essential for Virus Viability. *Virology* **206**, 572-582.

- 217 Moyer, R. W. and Graves, R. L. 1981. The mechanism of cytoplasmic orthopoxvirus DNA replication *Cell* **27**, 391-401.
- 218 Müller, G., and Peters, D. 1963: Cited by Munz, E. K., and Owen, N. C. (1966).
- 219 Munyon, W. E., Paoletti, E., and Grace, J. T. Jnr. 1967. RNA polymerase activity in purified infectious vaccinia virus. *Proc. Natl. Acad. Sci. USA*. **58**, 2280-2288.
- 220 Munz, E. K., and Owen, N. C. 1966. Electron microscopic studies on lumpy skin disease virus type "Neethling". *Onderstepoort J. vet. Res.* **33** (1), 3-8.
- 221 Murphy, P. M., and Tiffany, H. L. 1991. Cloning of complementary DNA encoding a functional human interleukin-8 region. *Science* **253**, 1280-1283.
- 222 Murphy, P. M. 1996. Chemokine receptors: Structure, function and role in microbial pathogenesis. *Cytokine Growth Fact. Rev.* **7**, 47-64.
- 223 Nagington, J. and Horne, R. W. 1962. Morphological studies of orf and vaccinia viruses. *Virology* **16**, 248-260.
- 224 Nakano, E., Panicali, D., and Paoletti, E. 1982. Molecular genetics of vaccinia virus: Demonstration of marker rescue. *Proc. Natl. Acad. Sci. USA* **79**, 1593-1596.
- 225 Nakano, J. H. in *Clinical Virology Manual* (Eds. Specter, S. and Lancz, G. J.) Elsevier, 1986).
- 226 Nathanson, N. and McFadden, G. 1997. Viral virulence. In "Viral Pathogenesis" (N. Nathanson, Ed.) pp. 85-108, Lippincott-Raven, Philadelphia.
- 227 Neote, K., Digregorio, D., Mak, J. Y., Horuk, R., and Schall, T. J. 1993. Molecular cloning, functional expression, and signalling characteristics of a C-C chemokine receptor. *Cell* **72**, 415-425.
- 228 Oda, K. and Joklik, W. K. 1967. Hybridization and sedimentation studies of "early" and "late" vaccinia messenger RNA. *J. Molec. Biol.* **27**, 395-419.
- 229 Odend'hal, S. 1983. The geographical distribution of animal virus diseases. *Exp. Virol. Series*. Academic Press, New York, 219 and 313.

- 230 O'Dowd, B. F., Hnatowich, M., Caron, M. G., Lefkowitz, R. J., and Bouvier, M. J. 1989. Palmitoylation of the human beta 2-adrenergic receptor. Mutation of cys 341 in the carboxyl tail leads to an uncoupled nonpalmitoyl form of receptor. *J. Biol. Chem.* **264**, 7564-7569.
- 231 Office International des Epizooties (OIE), Vol. I. 1989. Sheep pox and goat pox. In: *Recommended diagnostic techniques and requirements for biological products.* (Paris)
- 232 Office International des Epizooties (OIE) Manual. 1996. *Lumpy Skin Disease* pp 93-100.
- 233 O'Hare, P. and Goding, C. R. 1988. Herpes simplex virus regulatory elements and the immunoglobulin octamer domain bind a common factor and are both targets for viral transcription *Cell* **52**, 435-445.
- 234 Panicali, D. and Paoletti, E. 1982. Construction of poxviruses as cloning vectors; Insertion of the thymidine kinase gene of herpes simplex virus into the DNA of infectious vaccinia virus. *Proc. Natl. Acad. Sci. USA* **79**, 4927-4931.
- 235 Panicali, D., Davies, S. W., Weinberg, R. L., and Paoletti, E. 1983. Construction of live vaccines using genetically engineered poxviruses: Biological activity of recombinant vaccinia virus expressing influenza virus hemagglutinin. *Proc. Natl. Acad. Sci. USA* **80**, 5364-5368.
- 236 Paoletti, E., Lipinskas, B. R., Samsonoff, C., Mercer, S., and Panicali, D. 1984. Construction of live vaccines using genetically engineered poxviruses: Biological activity of vaccinia virus recombinants expressing the hepatitis B surface antigen and the herpes simplex virus glycoprotein D. *Proc. Natl. Acad. Sci. USA* **81**, 193-197.
- 237 Palumbo, G. J., Glasgow, W. C., and Buller, R. M. L. 1993. Poxvirus-induced alteration of arachidonate metabolism. *Proc. Natl. Acad. Sci. USA* **90**, 2020-2024.
- 238 Patel, D. D. and Pickup, D. J. 1987. Messenger RNAs of a strongly-expressed late gene of cowpox virus contain 5' - terminal poly (A) sequences. *EMBO J.* **6**, 3787-3794.
- 239 Patty, R. E. 1970. Inhibition of foot-and-mouth disease virus by normal bovine serum. *Am. J. vet. Res.* **31**, 165-171.
- 240 Payne, L. G. and Kristensson, K. 1979. Mechanism of vaccinia virus release and its specific inhibition by N₁-isonicotinoyl-N₂-3-methyl-4-chlorobenzoylhydrazine. *J. Virol.* **32**, 614-622.

- 241 Pedley, C. B. and Cooper, R. J. 1987. The assay, purification and properties of vaccinia virus-induced uncoating protein. *J. Gen. Virol.* **68**, 1021-1028.
- 242 Perkus, M. E., Goebel, S. J., Davis, S. W., Johnson, G. P., Limbach, K., Norton, E. K., and Paoletti, E. 1990. Vaccinia virus host range genes. *Virology* **179**, 276-286.
- 243 Perkus, M. E., Goebel, S. J., Davis, S. W., Johnson, G. P., Norton, E. K., and Paoletti, E. 1991. Deletion of ss open reading frames from the termini of vaccinia virus. *Virology* **180**, 381-401.
- 244 Peters, D. 1956. The fine structure of the DNA containing core of vaccinia virus. *Virology* **21**, 266-269.
- 245 Peters, D. 1956. Morphology of resting vaccinia virus. *Nature* **287**, 1453-1455.
- 246 Pogo, B. G. T. 1977. Elimination of naturally occurring crosslinks in vaccinia virus DNA after viral penetration into cells. *Proc. Natl. Acad. Sci. USA* **74**, 1739-1742.
- 247 Pogo, B. G. T. and O'Shea, M. T. 1977. Further characterization of deoxyribonucleases from vaccinia virus. *Virology* **77**, 55-66.
- 248 Pogo, B. G. T. and O'Shea, M. 1978. The mode of replication of vaccinia virus DNA *Virology* **84**, 1.
- 249 Pogo, B. G. T. and O'Shea, M., and Freimuth, P. 1981. Initiation and termination of vaccinia virus DNA replication. *Virology* **108**, 241-248.
- 250 Preston, C. M., Frame, M. C., and Campbell, M. E. M. 1988. A complex formed between cell components and an HSV structural polypeptide binds to a viral immediate early gene regulating DNA sequence. *Cell* **52**, 425-434.
- 251 Prydie, J., and Coakley, W. 1959. Lumpy skin disease: tissue culture studies. *Bull. Epizoot. Dis. Afr.* **7**, 37-49.
- 252 Rajagopal, I., Ahn, B. Y., Moss, B., and Mathews, C. K. 1995. Roles of vaccinia virus ribonucleoside reductase and glutaredoxin in DNA precursor biosynthesis. *J. Biol. Chem.* **270**, 27415-27418.

- 253 Ramshaw, I., Ruby, J., Ramsay, A., Ada, G., and Karupiah, G. 1992. Expression of cytokines by recombinant vaccinia viruses: A model for studying cytokines in virus infections *in vivo*. *Immunol. Rev.* **127**, 157-182.
- 254 Ray, C. A., Black, R. A., Kronheim, S. R., Greenstreet, T. A., Sleath, P. R., Salvesen, G. S., and Pickup, D. J. 1992. Viral inhibition of inflammation: Cowpox virus encodes an inhibitor of the IL-1 β converting enzyme. *Cell* **69**, 597-604.
- 255 Reddy, M. K. and Bauer, W. R. 1989. Activation of the vaccinia virus nicking-joining enzyme by trypsin. *J. Biol. Chem.* **264**, 443-449.
- 256 Reid, K. B. M. 1995. The complement system- a major effector mechanism in humoral immunity. *The Immunologist* **3**, 206.
- 257 Robinson, A. J., and Lyttle, D. J., in *Recombinant Poxviruses* (Eds. Binns and Smith) CRC Press, Boca Raton, FL, 1992.
- 258 Robinson, D. N. and Cooley, L. 1997. *Drosophila* kelch is an oligomeric ring canal actin organizer. *J. cell. Biol.* **138**, 799-810.
- 259 Rohrmann, G. and Moss, B. 1985. Transcription of vaccinia virus early genes by a template-dependent soluble extract of purified virions. *J. Virol.* **56**, 349-355.
- 260 Rohrmann, G., Yuen, L., and Moss, B. 1986. Transcription of vaccinia virus early genes by enzymes isolated from vaccinia virions terminates downstream of a regulatory sequence. *Cell* **46** 1029-1035.
- 261 Roitt's Essential Immunology. Ivan Roitt. 9th Edition, Blackwell Science
- 262 Romero, C. H., Barrett, T., Evans, S. R., Kitching, R. P., Gershon, P. D., Bostock, C., and Black, D. N. 1993. Single capripoxvirus recombinant vaccine for the protection of cattle against rinderpest and lumpy skin disease viruses. *Vaccine* **11**, 737-742.
- 263 Romero, C. H., Barrett, T., Chamberlain, R. W., Kitching, R. P., Fleming, M., and Black, D. N. 1994. Recombinant capripox expressing the hemagglutinin protein gene of rinderpest virus: protection of cattle against rinderpest and lumpy skin disease viruses. *Virology* **204**, 425-429.

- 264 Romero, C. H., Barrett, T., Kitching, R. P., Bostock, C., and Black, D. N. 1995. Protection of goats against peste des pestis ruminants with recombinant capripoxvirus expressing the fusion and hemagglutinin protein genes of rinderpest virus. *Vaccine* **13**, 36-40.
- 265 Rosell, J. L., Earl, P. L., Weir, J. P., and Moss, B. 1986. Conserved TAAATG sequence at the transcriptional and translational initiation sites of vaccinia virus late genes deduced by structural and functional analysis of the HindIII H genome fragment. *J. virol.* **60**, 436-439.
- 266 Rouslahti, E. and Perschbacher, M. D. 1986. Arg-Gly-Asp: A versatile cell recognition signal. *Cell* **44**, 517-518.
- 267 Ruby, J. and Ramshaw, I. 1991. The antiviral activity of CD8⁺ T cells is dependent on interferon- γ . *Lymphokine Cytokine Res.* **10**, 353-358.
- 268 Sambrook, J., Fritsch, E. F., and Maniatis, T. (Eds.) 1989. *Molecular Cloning- A laboratory manual*. Second Edition. Cold Spring Harbor Laboratory Press.
- 269 Sanders, M. C., Way, M., Sakai, J., and Matsudaira, P. 1996. Characterization of the actin cross-linking properties of the scruin-calmodulin complex from the acrosomal process of *Limulus* sperm. *J. Biol. Chem.* **271**, 2651-2657.
- 270 Schall, T. J. 1991. Biology of the RANTES/SIS cytokine family. *Cytokine* **3**, 165-183.
- 271 Schmitt, J. F. C. and Stunnenberg, G. 1988. Sequence and transcriptional analysis of the vaccinia virus HindIII I fragment. *J. Virol.* **62**, 1889-1897.
- 272 Schultz, J., Milpetz, F., Bork, P., and Ponting, C. P. 1998. SMART, a simple modular architecture research tool: Identification of signalling domains. *Proc. Natl. Acad. Sci. USA.* **95**, 5857-5864.
- 273 Schultz, J., Copley, R. R., Doerks, T., Ponting, C. P., and Bork, P. 2000. SMART: A web-based tool for the study of genetically mobile domains. *Nucleic Acids Res.* **28**, 231-234.
- 274 Schwer, B. and Stunnenberg, H. G. 1988. Vaccinia virus late transcripts generated in vitro have a poly (A) head. *EMBO J.* **7**, 1183-1190.
- 275 Schwer, B., Visca, P., Vos, J. C., and Stunnenberg, H. G. 1987. Discontinuous transcription or RNA processing of vaccinia virus late messengers results in a 5' poly (A) head. *Cell* **50**, 163-169.

- 276 Sedgwick, S. G. and Smerdon, S. J. 1999. The ankyrin repeat: a diversity of interactions on a common structural framework. *TIBS* **24**, 311-316 (Review).
- 277 Senkevich, T. G., Joachim, J. B., Sisler, J. R., Koonin, E. V., Gholamreza, D., and Moss, B. 1996. Genome sequence of a human tumorigenic poxvirus: prediction of specific host response-evasion genes. *Science* **273**, 813-816.
- 278 Senkevich, T. G., Koonin, E. V., Bugert, J. J., *et al.* 1997. The Genome of Molluscum Contagiosum Virus: Analysis and Comparison with Other Poxviruses. *Virology* **233**, 19-42.
- 279 Shaffer, R. and Traktman, P. 1987. Vaccinia virus encapsidates a novel topoisomerase with the properties of a eukaryotic type I enzyme. *J. Biol. Chem.* **262**, 9309-9315.
- 280 Sharma, A., Hanai, R. and Mondragon, A. 1994. Crystal Structure of the amino-terminal fragment of vaccinia virus DNA topoisomerase I at 1.6-Å resolution. *Structure* **2**: 767-777.
- 281 Shchelkunov, S. N., Marennikova, S. S., Totmenin, A. V., Blinov, V. M., Chizhikov, V. Ye., Gutorov, V. V., Gashnikov, P. V., Andzhaparidze, O. G., and Sandakhchiev, L. S. 1991. *Dokl. Akad. Nauk. SSSR* (in Russian) **321**, 402-406.
- 282 Shchelkunov, S. N., Totmenin, A. V., Loparev, V.N *et al.* 2000. Alastrim Smallpox Variola Minor Genome DNA Sequences. *Virology* **226**, 361-386.
- 283 Shchelkunov, S. N., Blinov, V. M., and Sandakhchiev, L. S. 1993. Genes of variola and vaccinia viruses necessary to overcome the host protective mechanisms. *FEBS Lett.* **319**, 80-83.
- 284 Shchelkunov, S. N., Blinov, V. M., and Sandakhchiev, L. S. 1993. Ankyrin-like proteins of variola and vaccinia viruses. *FEBS Lett.* **319**, 163-165.
- 285 Shchelkunov, S. N., Massung, R. F., Esposito, J. J. 1995. Comparison of the genome DNA sequences of Bangladesh-1975 and India-1967 variola viruses. *Virus Res.* **36**, 107-118.
- 286 Schmitt, J. F. and Stunnenberg, H. G. 1988. Sequence and transcription analysis of the vaccinia virus *HindIII* I fragment. *J. Virol.* **62**, 1889-1897.

- 287 Shuman, S., Golder, M., and Moss, B. 1988. Characterization of vaccinia virus DNA topoisomerase I expressed in *Escherichia coli*. *J. Biol. Chem.* **263**, 16401-16407.
- 288 Shuman, S., Golder, M., and Moss, B. 1989. Insertional mutagenesis of the vaccinia virus gene encoding a type I DNA topoisomerase: evidence that the gene is essential for virus growth. *Virology* **170**, 302-306.
- 289 Silver, M., McFadden, G., Wilton, S., and Dales, S. 1979. Biogenesis of poxviruses: role for the DNA-dependent RNA polymerase II of the host during expression of late functions. *Proc. Natl. Acad. Sci. USA* **76**, 4122-4125.
- 290 Slabaugh, M. B., Johnson, T. L., and Matthews, C. K. 1984. Vaccinia virus induces ribonucleotide reductase in primate cells. *J. Virol.* **52**, 507-514.
- 291 Smith, G. L., and Moss, B. 1983. Infectious poxvirus vectors have a capacity for at least 25,000 base pairs of foreign DNA. *Gene* **25**, 21-28.
- 292 Smith, G. L., Mackett, M., and Moss, B. 1983. Infectious vaccinia virus recombinants that express hepatitis B virus surface antigen. *Nature* **302**, 490-495.
- 293 Smith, G. L., Murphy, B. R., and Moss, B. 1983. Construction and characterization of an infectious vaccinia virus recombinant that expresses the influenza hemagglutinin gene and induces resistance to influenza virus infection in hamsters. *Proc. Natl. Acad. Sci. USA* **80**, 7155-7159.
- 294 Smith, G. L. 1993. Vaccinia virus glycoproteins and immune evasion. The sixteenth Fleming lecture. *J. Gen. Virol.* **74**, 1725-1740.
- 295 Soloski, M. J. and Holowczak, J. A. 1981. Characterization of supercoiled nucleoprotein complexes released from detergent-treated vaccinia virions. *J. Virol.* **37**, 770-783.
- 296 Spehner, D., Gillard, S., Drillien, R., and Kim, A. 1988. A cowpox virus gene required for multiplication in chinese hamster ovary cells. *J. Virol.* **62**, 1297-1304.
- 297 Spencer, E., Shuman, S., and Hurwitz, J. 1980. Purification and properties of vaccinia virus DNA-dependent RNA polymerase. *J. Biol. Chem.* **255**, 5388-5395.

- 298 Spriggs, M. K., Hruby, D. E., Maliszewski, C. R., Pickup, D. J., Sims, J. E., Buller, R. M.L., and VanSlyke, J. 1992. Vaccinia and cowpox viruses encode a novel secreted interleukin-1-binding protein. *Cell* **71**, 145-157.
- 299 Springer, T. A. 1994. Traffic signals for lymphocyte recirculation and leukocyte emigration: The multistep paradigm. *Cell* **76**, 301-314.
- 300 Steinert, P. M. and Roop, D. R. 1988. Molecular and cellular biology of intermediate filaments. *Annu. Rev. Biochem.* **57**, 593-625.
- 301 Staden, R., Beal, K. F., and Bonfield, J. K. 1998. The Staden Package, Computer Methods in Molecular Biology (Eds. Steven Misener and Steve Krawetz). The Human Press, Inc., Totowa, NJ 07512.
- 302 Stroobant, P., Rice, A. P., Gullick, W. J., Cheng, D. J., Kerr, I. M., and Waterfield, M. D. 1985. Purification and characterization of vaccinia virus growth factor. *Cell* **42**, 383-393.
- 303 Stokes, G. V. 1976. High-voltage electron microscope study of the release of vaccinia virus from whole cells. *J. Virol.* **18**, 636-642.
- 304 Szybalski, W. R., Erikson, R. L., Gentry, L. G., Gafford, L. G., and Randall, C. C. 1963. Unusual properties of fowlpox virus DNA. *Virology* **19**, 586-589.
- 305 Tattersall, P. and Ward, D. C. 1976. Rolling hairpin model for replication of parvovirus and linear chromosomal DNA. *Nature* **263**, 106-109.
- 306 Taylor, L., Weinberg, R., Rawaoka, Y., Desmetre, R., and Paoletti, E. 1988. Efficacy studies on a canarypox-rabies recombinant virus. *Vaccine* **9**, 190-193.
- 307 Taylor, J. and Paoletti, E. 1988. Fowlpoxvirus as a vector for non-avian species. *Vaccine* **6**: 466-472.
- 308 Thomas, A. D., and Maré. 1945. Knopvelsiekte. *J. S. Afr. Vet. Med. Ass.* **16**, 36-43.
- 309 Thomas, A. D., Robinson, E. M. and Alexander, R. A. (1945) Lumpy Skin Disease- Knopvelsiekte. *Veterinary Newsletter No. 10, Div. Vet. Services, Onderstepoort, May 5th, 1945*, 1-3.

- 310 Tooze, J. (ed.) 1981. DNA Tumor viruses, 2nd Ed. Cold Spring Harbor Laboratory. Cold Spring Harbor, N. Y.
- 311 Twardzik, D. R., Brown, J. P., Ranchalis, J. E., Todaro, G. J., and Moss, B. 1985. Vaccinia virus-infected cells release a novel polypeptide functionally related to transforming and epidermal growth factors. *Proc. Natl. Acad. Sci. USA*. **82**, 5300-5304.
- 312 Ueda, Y., Morikawa, S. and Watanabe, T. 1995. Unclassified Poxvirus: Characterization and Physical Mapping of Cotia Virus DNA and Location of a Sequence Capable of Encoding a Thymidine Kinase. *Virology*. **210**, 67-72.
- 313 Ulaeto, D., Grosenbach, D., and Hruby, D. E. 1996. The vaccinia virus 4c and A-type inclusion proteins are specific markers for the intracellular mature virus particle. *J. virol.* **70**, 3372-3377.
- 314 Upton, C., Mossman, K., and McFadden, G. 1992. Encoding of a homolog of the IFN- γ receptor by myxoma virus. *Science* **258**, 1369-1372.
- 315 Upton, C., Stuart, D. T. and McFadden, G. 1991. Identification and DNA sequence of the large subunit of the capping enzyme from Shope fibroma virus. *Virology* **183**, 773-777.
- 316 Upton, C., Stuart, D. T. and McFadden, G. 1993. Identification of a poxvirus gene encoding a uracil-DNA glycosylase. *Proc. Natl. Acad. Sci. U.S.A.* **90**: 4518-4522.
- 317 Upton, C., Macen, J. L., Schreiber, M., and McFadden, G. 1991. Myxoma virus expresses a secreted protein with homology to the tumor necrosis factor receptor gene family that contributes to viral virulence. *Virology* **184**, 370-382.
- 318 Van Rooyen, P. J., Kümm, N. A. L., Weiss, K. E., and Alexander, R. A. 1959. A preliminary note on the adaptation of a strain of lumpy skin disease virus to propagation in embryonated eggs. *Bull. Epiz. Dis. Afr.* **7**, 79-85.
- 319 Varkey, J. P., Muhlrud, P. J., Minniti, A. N., Do, B., and Ward, S. 1995. The *Caenorhabditis elegans* spe-26 gene is necessary to form spermatids and encodes a protein similar to the actin-associated proteins kelch and scruin. *Genes Dev.* **9**, 1074-1086.
- 320 Vassef, A. 1987. Conserved sequences near the early transcription sites of vaccinia virus. *Nucleic Acids Res.* **15**, 1427-1443.

- 321 Vassef, A., Mars, M., Dru, A., Plucienniczak, A., Streek, R. E., and Beaud, G. 1985. Isolation of *cis*-acting vaccinia virus DNA fragments promoting expression of herpes simplex virus thymidine kinase by recombinant vaccinia viruses. *J. Virol.* **55**, 1643-1672.
- 322 Venkatesan, S., Baroudy, B. M., and Moss, B. 1981. Distinctive nucleotide sequences adjacent to multiple initiation and termination sites of an early vaccinia virus gene. *Cell* **25**, 805-813.
- 323 Venkatesan, S., Gershowitz, A., and Moss, B. 1982. Complete nucleotide sequences of two adjacent early vaccinia virus genes located within the inverted terminal repetition. *J. Virol.* **44**, 637-646.
- 324 Vilcek, J., Gray, P. W., Rinderknecht, E., and Sevastopoulos, C. G. 1985. Interferon gamma: A lymphokine for all seasons. *Lymphokines* **11**, 1-32.
- 325 Villarreal, E. C. and Hruby, D. E. 1986. Mapping the genome location of the gene encoding alpha-amanitin resistance in vaccinia virus mutants. *J. Virol.* **57**, 65-70.
- 326 Villarreal, E. C., Roseman, N. A., and Hruby, D. E. 1984. Isolation of vaccinia virus mutants capable of replicating independently of the host cell nucleus. *J. Virol* **51**, 539-566.
- 327 Von Backstrom, U. 1945. *Ngamiland cattle disease. Preliminary report on a new disease, the etiological agent being probably of an infectious nature.* *J. S. A. V. M. A.*, **16** (2), 29-35.
- 328 Von Bulow, M., Heid, H., Hess, H., and Franke, W. W. 1995. Molecular nature of calicin, a major basic protein of the mammalian sperm head cytoskeleton. *Exp. Cell. Res.* **219**, 407-413.
- 329 Vos, J. C. and Stunnenberg, H. G. 1988. Derepression of a novel class of vaccinia virus genes upon DNA replication. *EMBO J.* **7**, 3487-3492.
- 330 Wade-Evans, A. M., Romero, C. H., Mellor, P., Takamatsu, H., Anderson, J., Thevasagayam, J., Fleming, M. J., Mertens, P. P. C., and Black, D. N. 1996. Expression of the core major structural protein (VP7) of bluetongue virus by a recombinant capripox virus, provides partial protection of sheep against a virulent heterotypic bluetongue virus challenge. *Virology* **220**, 227-231.
- 331 Way, M., Sanders, M., Chafel, M., Tu, Y-H., Knight, A., and Matsudaira, P. 1995. β -Scruin, a homologue of the actin-crosslinking protein scruin, is localized to the acrosomal vesicle of *Limulus* sperm. *J. Cell. Sci.* **108**, 3155-3162.

- 332 Wei, C. M. and Moss, B. 1974. Methylation of newly synthesized viral messenger RNA by an enzyme in vaccinia virus. *Proc. Natl. Acad. Sci. USA*. **71**, 3014-3018.
- 333 Wei, C. M. and Moss, B. 1975. Methylated nucleotides block 5'-terminus of vaccinia virus mRNA. *Proc. Natl. Acad. Sci. USA*. **72**, 318-322.
- 334 Weir, J. P., Bajszar, G., and Moss, B. 1982. Mapping of the vaccinia virus thymidine kinase gene by marker rescue and by cell-free translation of selected mRNA. *Proc. Natl. Acad. Sci. USA* **79**, 1210-1214.
- 335 Weir, J. P., and Moss, B. 1987. Determination of the transcriptional regulatory region of a vaccinia virus late gene *J. Virol.* **61**, 75-80.
- 336 Weiss, K. E. 1960. Unpublished observations, cited in *Lumpy Skin Disease. Virus Monographs*. Vol 3. New York: Springer Verlag.
- 337 Weiss, K. E. 1963. *Lumpy skin disease. Emerging diseases of Animals, FAO Agricultural Studies*, **61**, 179-201.
- 338 Weiss, K. E. 1968. Lumpy skin disease virus, *Virology Monographs*. **3**, 111-131.
- 339 Westwood, J. C. N., Harris, W. J., Zwartou, H. T., Titmus, D. H. J., and Appleyard, G. 1964. Studies on the structure of vaccinia virus. *J. gen. Microbiol.* **34**, 67.
- 340 Whitaker-Dowling, P. and Youngner, J. S. 1983. Vaccinia rescue of VSV from interferon-induced resistance: reversal of translation block and inhibition of protein kinase activity. *Virology* **131**, 128-136.
- 341 Willer, D. O., McFadden, G. and Evans, D. H. 1999. The Complete Genome Sequence of Shope (Rabbit) Fibroma Virus. *Virology*. **264**, 319-343.
- 342 Wiktor, T. J., McFarlan, R. I., Reagan, K. J., Dietzschold, B., Curtis, P. J., Wunner, N. H., Kieny, M. P., Lathe, R., Lecocq, J-P, Mackett, M., Moss, B., and Koprowski, H. 1984. Protection from rabies by a vaccinia virus recombinant containing the rabies virus glycoprotein gene. *Proc. Natl. Acad. Sci. USA* **81**, 7194-7198.

- 343 Wittek, R., Menna, A., Muller, K., Schumperli, D., Bosley, P. G., and Wyler, R. 1978. Inverted terminal repeats in rabbit poxvirus and vaccinia virus DNA. *J. Virol.* **28**, 171-181.
- 344 Wittek, R., Kuenzle, C. C., and Wyler, R. 1979. High G+C content in parapoxvirus DNA. *J. gen. Virol.* **43**, 231-234.
- 345 Wittek, R., Richner, B., and Hiller, G. 1984. Mapping of the genes coding for the two major vaccinia virus core polypeptides. *Nucleic Acids Res.* **12**, 4835-4848.
- 346 Winslow, O. E. 1974. *A Destroying Agent: the Conquest of Smallpox in Colonial Boston*. Boston, Houghton Mifflin.
- 347 Wittek, R., Cooper, J., Barbosa, E., and Mos, B. 1980. Expression of the vaccinia virus genome-analysis and mapping of mRNAs encoded within the inverted terminal repetition. *Cell* **21**, 487-493.
- 348 Wolff, T., O'Neill, R. E. and Palese, P. 1998. NS1-Binding protein (NS1-BP): a novel human protein that interacts with the influenza A virus nonstructural NS1 protein is relocalized in the nuclei of infected cells. *J. Virol.* **72**, 7170-7180.
- 349 Woods, J. A. 1988. Lumpy Skin Disease- a review. *Trop. Anim. Hlth. Prod.* **20**, 11-17.
- 350 Wright, C. F. and Moss, B. 1987. In vitro synthesis of vaccinia virus late mRNA containing a 5' poly (A) leader sequence. *Proc. Natl. Acad. Sci. USA.* **84**, 8883-8887.
- 351 Xue, F. and Cooley, L. 1993. Kelch encodes a component of intracellular bridges in *Drosophila* egg chambers. *Cell* **72**, 681-693.
- 352 Yasui, A., Eker, A. P., Yasuhira, S., Yajima, H., Kobayashi, T., Takao, M., and Oikawa, A. 1994. A new class of DNA photolyases present in various organisms including placental mammals. *EMBO J.* **13**, 6143-6151.
- 353 Young, E., Basson, P. A., and Weiss, K. E. 1970. Experimental infection of game animals with lumpy skin disease virus (Prototype strain Neethling). *Onderstepoort J. vet Res.* **37**, 79-88.
- 354 Yuen, L., Davison, J. A., and Moss, B. 1987. Early promoter-binding factor from vaccinia virions. *Proc. Natl. Acad. Sci. USA.* **84**, 6069-6073.

- 355 Yuen, L., and Moss, B. 1987. Oligonucleotide sequence signaling transcriptional termination of vaccinia virus early genes. *Proc. Natl. Acad. Sci. USA* **84**, 6417-6421.
- 356 Zantinge, J. L., Krell, P. J., Derbyshire, B. J., and Nagy, E. 1996. Partial transcriptional mapping of the fowlpox virus genome and analysis of the EcoRI L fragment. *J. Gen Virol.* **77**, 603-614.
- 357 Zinkernagel, R. M. 1996. Immunology taught by viruses. *Science* **271**, 173-178.

5.5 PAPERS AND CONGRESS CONTRIBUTIONS

Paper (in preparation):

C. Stipinovich, F. T. Vreede, D. B. Wallace, L. H. Nel and G. J. Viljoen

Molecular Characterization of PstI clones E, M, K, F and G of the Lumpy Skin Disease Virus Genome, representative of the Left-Hand Terminal and Central Regions

Congress Contributions:

Poster:

Stipinovich, C., Vreede, F. T., Wallace, D. B., Viljoen, G. J., and Nel, L. H.

Sequencing and Characterization of Lumpy Skin Disease Virus

BIOY2K Combined Millenium Meeting, Grahamstown, South Africa,

January 2000

Poster:

Vreede, F. T., Stipinovich, C., Wallace, D. B., Taljaard, L. C. F., and Viljoen, G. J.

Sequence Analysis of Terminal and Central Regions of the LSDV Genome.

XIIIth International Poxvirus and Iridovirus Symposium, Mont Pellier, France,

September 2000

Poster:

Vreede, F. T., Stipinovich, C., Wallace, D. B., Taljaard, L. C. F., and Viljoen, G. J.

Sequence Analysis of Terminal and Central Regions of the LSDV Genome.

International Conference of Bacterial and Viral Virulence Factors, Smolenice, Slovakia,

September 2000