

Referenzen K. Moelling: Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren. C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

Supermacht des Lebens.

Anhang:

Literatur 304

Zusätzlich zu den Referenzen im Buch sind hier Referenzen kapitelweise aufgeführt. Wer keinen Zugang zu Journalen hat, kann mir eine e mail schreiben und ein pdf von einigen Publikationen von mir per e mail zugesendet erhalten.

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Bücher:

Brockman J (Hrsg): Das Wissen von morgen: Was wir für wahr halten, aber nicht beweisen können: Die führenden Wissenschaftler unserer Zeit beschreiben ihre grossen Ideen. S. Fischer Verlag, Frankfurt 2008
Chin J (Ed): Control of communicable diseases. Manual. American Public Health Association, Washington 2000

Crawford DH.: Deadly companions: How microbes shaped our history. Oxford Univ. Press, New York 2007

Dyson FJ.: The Sun the Genome and the Internet. Oxford Univ. Press, New York 1999

Dyson FJ.. The Scientist as Rebel. The New York Review of Books, New York 2006

Dyson FJ.: The Origins of Life, Cambridge University Press 1986

Eigen M.: From Strange Simplicity to Complex Familiarity, A Treatise on Matter, Information, Life and Thought, Oxford Univ. Press, 2013

Eigen M.: Error Catastrophe and antiviral Strategy. PNAS 2002;99:13374

Fischer EP.: Das Genom. S. Fischer Verlag, Frankfurt 2004

Flint SJ et al.: Principles of Virology. ASM Press, Herndon, USA 2000

GEO kompakt Nr.23:Die Grundlagen des Wissens, Die ersten vier Milliarden Jahre. Gruner und Jahr, Hamburg 2010

Gottschalk G.: Welt der Bakterien Die unsichtbaren Beherrscher unseres Planeten. Weinheim: WILEY-VCH, 2009

Mahy BWJ.: The Dictionary of Virology Academic Press, Amsterdam 2009

Meyer A.: Evolution ist überall. Böhlau Verlag, Wien 2008

Moelling K.: Das AIDS, Virus Verlag Chemie 1988

Moore B.: Elefanten im All: Unser Platz im Universum. Kein & Aber, Zürich 2012

Napier J.: Evolution McGraw-Hill Comp. London 2007

Regenmortel MHV van and Mahy BW.: Desk Encyclopedia of Human Medical Virology, Plant and Fungal Virology, and Animal and Bacterial Virology, Academic Press 2010

Ryan F: Virolution, Spektrum Akademischer Verlag, Heidelberg 2010

Science Sonderheft: HIV and TB in South Africa. Science 2013; 339: 873

Schrödinger E: Was ist Leben? Leo Lehnen Verlag, Sammlung Dalp, München, 1951

Scott A: Zellpiraten: Die Geschichte der Viren – Molekül und Mikrobe. Birkhäuser, Basel 1990

Sentker A and Wigger F (Hrsg.): Triebkraft Evolution, Die ZEIT Wissen Edition, Spektrum Akad.Verlag, Heidelberg 2008

Spektrum der Wissenschaft Spezial: 1/2014: Evolution:Wie sie die Geschichte des Lebens geformt hat. Spektrum Akad. Verlag, HD 2014

Thoms SP.: Ursprung des Lebens. S. Fischer Verlag, Frankfurt 2005

Villarreal LP.: Viruses and the Evolution of life. American Society of Microbiology Press, Washington DC 2005

Wagener Ch.: Molekulare Onkologie. G. Thieme Verlag Stuttgart 1999

Witzany G (Ed): Natural Genetic Engineering and Natural Genome Editing, Annals N. Y. Acad. Sciences 2009

Witzany G (Ed): Viruses: Essential Agents of Life. Springer, Dodrecht 2012

Wolfe N.: Virus, Die Wiederkehr der Seuchen, rowohlt Verlag, 2012

Zimmer C.: Parasite rex: Inside the bizarre world of nature's most dangerous creatures. New York: Free Press 2000

Zimmer C.: A Planet of viruses. The University of Chicago Press, Chicago 2012

Nachtrag.

Mölling K.: Die Supermacht des Lebens - Reisen in die erstaunliche Welt der Viren. CH Beck Verlag, München 2014

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren.* C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

Ausgewählte Original-Publikationen in Journalen:

- Baumgartner M et al Moelling K.: c-Src-mediated epithelial cell migration and invasion regulated by PDZ binding site. *MCB* 2008; 28:642
- Bezier A et al.: Polydnaviruses of Braconid Wasps derive from an ancestral Nudivirus *Science* 2009; 323: 926
- Biemont C, Vieira C.: Junk DNA as an evolutionary force. *Nature* 2006;443:521
- Boyer M et al. Raoult D.: Mimivirus shows dramatic genome reduction after intraamoebal culture. *PNAS* 2011;108:10296
- Broecker F et al Moelling K.: Analysis of the Int Microbiome of a Clostridium d. Patient after Fecal Transplantation *Digestion* 2013; 88:243
- Cech TR et al.: Hammerhead nailed down. *Nature* 1994; 372:39
- Cerritelli SM and Crouch RJ.: Ribonuclease H: The enzymes in eukaryotes. *FEBS J* 2009; 276:1494
- Chapman Ja et al.: The dynamic genome of Hydra *Nature* 2010; 464:592
- Cordaux R, Batzer MA.: The impact of retrotransposons on human genome evolution. *Nat Rev Genet* 2009; 10:691
- Dewannieux M et al.: Identification of an infectious progenitor for the multiple-copy HERV. *Genome Res* 2006; 16:1548
- D'Hont et al.: The banana (*Mus acuminata*) genome and the evolution of monocotyledonous plants, *Nature* 2012, 488:213
- Dolinoy DC.: The agouti mouse model: an epigenetic biosensor for alterations on the fetal epigenome *Nutr Rev.* 2008; 66(Suppl 1): 7
- Donner P, Greiser-Wilke I, Moelling K.: Nuclear localization and DNA binding of the transforming protein of MC29 *Nature* 1982; 296:262
- Doudna JA and Szostak JW.: RNA-catalysed synthesis of complementary-strand RNA *Nature* 1989; 33:519
- Dreher TW.: Viral tRNAs and tRNA-like structures. *Wiley Interdiscip Rev RNA.* 2010; 1:402
- Edwards RA, Rohwer F.: Viral metagenomics. *Nat Rev Microbiol* 2005; 3: 504.
- Fischer MG, Suttle CA.: A Virophage at the Origin of Large DNA Transposons *Science* 2011; 332:231
- Fouchier RA, García-Sastre A, Kawaoka Y.: H5N1 virus: Transmission studies resume for avian flu. *Nature* 2013;493:609
- Fresco LO.: The GMO Stalemate in Europe, *Science* 2012; 33: 883
- Glass JI et al. Venter C.: Essential genes of a minimum bacterium. *PNAS* 2006; 103:425
- Goffeau A.: Genomics: multiple moulds. *Nature.* 2005; 438:109
- Grossniklaus U et al.: Transgenerational epigenetic inheritance: how important is it? *Nat Rev Genet.* 2013; 14:228
- Hanahan D, Weinberg RA.: Hallmarks of Cancer: The Next Generation. *Cell* 2011; 144:646
- Hansen TB et al.: Natural RNA circles function as efficient microRNA sponges. *Nature* 2013; 495:384
- Heinzerling L et al, Moelling K.: Intratumoral injection of DNA encoding human interleukin 12 into patients with metastatic melanoma: clinical efficacy. *Hum Gene Ther.* 2005; 1:35.
- Holderfield M et al.: Targeting Raf Kinases for cancer therapy: BRAf-mutated melanoma and beyond *Nature Rev. Cancer* 2014; 14:455
- Holmes EC.: What Does Virus Evolution Tell Us about Virus Origins? *Journal of Virology* 2011; 85:5247
- Horvath P, Barrangou R.: CRISPR/Cas9, the Immune System of Bacteria and Archaea. *Science* 2010; 327:167
- Katzourakis A. et al.: Macroevolution of complex retroviruses *Science* 2009; 325:1512
- Koonin EV.: On the Origin of Cells and Viruses. *Annals of the NY Acad. Sciences* 2009; 1178:47
- Koonin EV Dolja VV.: A virocentric perspective on the evolution of life. *Curr Opin Virol.* 2013; 5:546
- Koonin EV, Senkevich T, Dolja V.: The ancient Virus World and evolution of cells. *Biology Direct* 2006; 1:29
- Krupovic M, Ravantti JJ, Bamford DH.: Geminiviruses: a tale of a plasmid becoming a virus. *BMC Evol Biol.* 2009; 9:112.
- Lampson BC, Inouye M and Inouye S.: Retrons, tmsDNA, and the bacterial genome *Cytogenet Genome Res.* 200;110:491
- Lambowitz AM ZimmerlyS.: Mobile group II introns. *Annual Review of Genetics* 2004; 38:1.
- Lander ES et al.: Initial sequencing and analysis of the human genome. *Nature* 2001; 409:860
- Lane HC, La Montagne H, Fauci AS.: Bioterrorism: A clear and present danger. *Nature Med.*2001; 7:1271
- Lepage P et al Dore J.: A metagenomic insight into our gut's microbiome. *Gut* 2013; 62:146
- Lincoln TA, Joyce GF.: Self-sustained replication of an RNA enzyme. *Science* 2009; 323:1229
- Liu J, Levens D.: Making myc. *Curr Top Microbiol Immunol.* 2006; 302:1.
- Liu M et al. Miller JF.: Genomic and genetic analysis of Bordetella bacteriophages encoding reverse transcriptase-mediated tropism-switching cassettes. *J Bacteriol* 2004; 186:1503

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren*. C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

- Lowrie DB et al. Moelling K Silva CL.: Therapy of tuberculosis in mice by DNA vaccination. *Nature* 1999; 400:269.
- Mandal PK and Kazazian HH Jr.: Snapshot: Vertebrate Transposons, *Cell* 2008; 135:192
- Matzen K et al., Moelling K.: RNase H-mediated retrovirus destruction in vivo triggered by oligodeoxynucleotides. *Nature Biotechnol.* 2007, 25:669 and editorial: Johnson WE Assisted Suicide for Retroviruses. *Nature Biotechnol* 2007; 25:643
- McCutcheon JP, Moran NA.: Extreme genome reduction in symbiotic bacteria. *Nat Rev Micro* 2012; 10:13
- Mi S et al.: Syncytin is a captive retroviral envelope protein involved in human placental morphogenesis. *Nature* 2000; 403:785
- Mitrovic J et al. Moelling K, Kube M.: Generation and analysis of draft sequences of Stolbur Phytoplasma. *Mol Microbiol Biotech.*2014; 24:1
- Morris K, Mattick JS.: The rise of regulatory RNA *Nat.RevGenet.* 2014; 15:423
- Mölling K et al.: Association of viral reverse transcriptase with an enzyme degrading the RNA in hybrids. *Nature NB* 1971; 234:240.
- Moelling K.: Targeting the retroviral ribonuclease H by rational drug design. *AIDS* 2012; 26:1983
- Moelling K et al.: Relationship between retroviral replication and RNA interference machineries. *CSHS* 2006; 71:365
- Moelling K et al.: Serine- and threonine-specific protein kinase activities of purified gag-mil and gag-raf proteins. *Nature* 1984; 312:558
- Moelling K.: Are viruses our oldest ancestors? *EMBO Reports.* 2012; 13:1033
- Moelling K.: What contemporary viruses tell us about evolution - a personal view. *Archives Virol* 2013; 158:1833
- Moelling K.: *Leben Viren?* in Walde P und Kraus F (Hrsg) *An den Grenzen des Wissens*. Hochschulverlag ETH, Zürich 2008
- Moelling K et al.: Relationship between retroviral replication and RNA interference machineries. *CSHS Q B* 2006; 71:365
- Moelling K et al. DNA-binding activity is associated with purified myb proteins from AMV and E26 Cell. 1985;40:983
- Moelling K et al.: Silencing of HIV by hairpin-loop-structured DNA Oligonucleotide (siDNA). *FEBS L.* 2006; 580:3545
- Morens DM, Fauci AS.: Emerging infectious diseases. *PLoS Pathog.* 2013 ;9:e1003467
- Mokili JL, Rohwer F, Dutilh BE.: Metagenomics and future perspectives in virus discovery. *Curr Opin Virol.* 2012; 2:63
- Muller G et al. Moelling K: Nucleocapsid protein of HIV-1 increasing catalytic activity of a Ki-ras ribozyme *JMB* 1994, 242:422
- Muotri AR et al. Gage FH.: L1 retrotransposition in neurons is modulated by MeCP2. *Nature* 2010; 468:443.
- Nandakumar J, Cech TR.: Finding the end: recruitment of telomerase to telomeres. *Nat Rev Mol Cell Biol.*2013; 14:69
- Nowotny M.: Retroviral integrase superfamily: The structural perspective. *EMBO Rep* 2009; 10:144
- Pappas KM.: Cell-cell signaling and the *Agrobacterium tumefaciens* Ti plasmid copy number. *Plasmid* 2008; 60:89
- Pennisi E.: Ever bigger viruses shake tree of Life *Science* 2013; 341:226
- Philippe N et al.: Pandoraviruses: amoeba viruses with 2.5 Mb reaching that of parasitic eukaryotes. *Science.* 2013; 341:281
- Prangishvili D, Forterre P, Garrett RA.: Viruses of the Archaea: a unifying view. *Nat Rev Micro* 2006; 4:837
- Qian L et al. In vivo reprogramming of murine cardiac fibroblasts into induced cardiomyocytes. *Nature.* 2012; 485:593
- Qin J et al.: A human gut microbial gene catalogue established by metagenomic sequencing. *Nature* 2010; 464:59
- Raoult D et al. Claverie JM.: The 1.2 megabase genome sequence of Mimivirus. *Science.* 2004; 306:1344.
- Reardon S.: Phage therapy gets revitalized, *Nature* 2014; 510:15
- Raoult D, Forterre P.: Redefining viruses: lessons from Mimivirus. *Nat Rev Microbiol* 2008; 6:315
- Reyes A. et al. Gordon JI.: Viruses in the faecal microbiota of monozygotic twins and their mothers. *Nature* 2010; 466:344
- Rommel Ch. et al. Moelling K et al.: Differentiation stage-specific inhibition of the Raf-MEK-ERK pathway by Akt. *Science*1999; 286:1738
- Rossi JJ, June CH, Kohn DB.: Genetic therapies against HIV. *Nat Biotechnol.* 2007; 25:144
- Rossi JJ, June CH, Kohn DB.: Genetic therapies against HIV. *Nat Biotechnol.* 2007; 25:144
- Roossinck MJ.: Lifestyles of plant viruses. *Philos Trans R Soc Lond B Biol Sci.* 2010; 365:1899.

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren.* C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

- Schnable PS et al.: The B73 maize genome: complexity, diversity, and dynamics. *Science* 2009; 326:1112
- Sharp PA.: The discovery of split genes and RNA splicing. *TRENDS in Biochemical Sciences* 2005; 30:279
- Sherr CJ, McCormick F.: The RB and p53 pathways in cancer. *Cancer Cell.* 2002;2:103
- Singer T et al. Gage FH.: LINE-1 retrotransposons: mediators of somatic variation in neuronal genomes? *Trends Neurosc.* 2010; 33:345
- Simon DM and Zimmerly SA.: Diversity of uncharacterized reverse transcriptases in bacteria. *Nucl. Acid. Res.* 2008; 36:7219
- Slotkin RK and Martienssen R.: Transposable elements and the epigenetic regulation of the genome. *Nature Reviews Genetics* 2007; 8: 272
- Song JJ et al.: Crystal structure of Argonaute and its implications for RISC slicer activity. *Science* 2004; 305:1434
- Sorek R et al.: CRISPR - a widespread system with resistance against phages in bacteria and archaea. *Nat Rev Microbiol* 2008; 6:181
- Strand MR, Burke GR.: Polydnaviruses as symbionts and gene delivery systems. 2012, *PLoS Pathog* 8:e1002757
- Suttle CA.: Viruses in the sea. *Nature* 2005; 437:356
- Taylor J, Pelchat M.: Origin of hepatitis delta virus. *Future Microbiol* 2010; 5:393
- Tarlinton RE, Meers J, Young PR.: Retroviral invasion of the koala genome. *Nature* 2006; 442:79
- Taubenberger JK, Morens DM.: Influenza viruses: breaking all the rules. *MBio.* 2013; 4: pii: e00365-13.
- Turnbaugh PJ, Gordon JL.: The core gut microbiome, energy balance and obesity. *J Physiol.* 2009; 587:4153
- Tisdale M et al. Moelling K.: Mutations in the RNase H domain of HIV-1 abolish virus infectivity. *J Gen Virol* 1991; 72:59.
- Tsagris EM et al.: Viroids. *Cell Microbiol* 2008;10:2168
- Van Etten J.: Another really, really big virus. *Viruses* 2011; 3:32
- Van Etten J.: Giant viruses. *American Scientist* 2011; 2
- Venter C.: Multiple personal genomes await. *Nature* 2010; 464:676
- Villarreal LP, Witzany G.: Viruses are essential agents within the roots and stem of the tree of life. *J Theor Biol* 2002; 262:698
- Vogelstein B et al.: Cancer Genome Landscape *Science* 2013; 339:1546
- Watanabe T. et al.: Characterization of H7N9 influenza A viruses isolated from humans *Nature* 2013; 501:551
- Webb CH et al.: Widespread occurrence of self-cleaving ribozymes. *Science* 2009;326:953
- Weber R et al. Moelling K.: Phase I clinical trial with HIV-1 gp160 plasmid vaccine in HIV-1-infected asymptomatic subjects. *Eur J Clin Microbiol Infect Dis.* 2001;11:800
- Wittmer L et al. Moelling K.: Retroviral self-inactivation in the mouse vagina induced by short DNA. *Antiviral Res.* 2009; 82:22
- Yi L et al.: Multiple roles of p53-related pathways in somatic cell reprogramming and stem cell differentiation. *Cancer Res.* 2012; 72:5635
- Yutin N and EV Koonin EV.: Proteorhodopsin genes in giant viruses. *Biology Direct* 2012, 7:34
- Zhang T.: RNA viral community in human feces: prevalence of plant pathogenic viruses. *PLoS Biol* 2006; 4:e3
- Zimmermann S et al. Moelling K.: MEK1 mediates a positive feedback loop on Raf activity. *Oncogene*1997; 15:1503
- Zimmermann S et al. Moelling K.: Phosphorylation and regulation of Raf by Akt. *Science* 1999; 286:1741
- Zarowiecki M. Metagenomics with guts. *Nat Rev Microbiol.* 2012;10:674
- Zhou L et al. Transposition of hAT elements links transposable elements and V(D)J recombination. *Nature.*2004; 432:995
- zur Hausen H.: Papilloma viruses and Cancer: From basic studies to clinical application. *Nat Rev Cancer* 2002; 2:342

Referenzen K. Moelling: Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren.
C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

Supermacht des Lebens - Reisen in die ertaunliche Welt der Viren C.H Beck Verlag 2014, Titel mit Seitenzahlen.

Reisen durch die erstaunliche Welt der Viren.

Fig 1 aufgereichte Viren

Vorwort und Dank 9

1. *Viren mal ganz anders* 11

Viren - eine Success-Story **Raucher Fig 2**

Nach dem Urknall **Zeit Fig 3**

Statt Adam und Eva

Am Anfang waren die Viren

Blick zurück

Matrose und das Spleißen **Spleiß Fig 4**

Viren, tot oder lebendig?

2. *Viren machen krank* 30

Viren schreiben Geschichte

HIV als Beispiel **Ball plus EM Aufn Fig 5**

Berliner Patient, Mississippi-Baby und ein Hamburger

Therapie als Prävention

Keine Impfung gegen HIV?

"Nackte DNA"

Mikrobizide als „Condom“ für Frauen

HIV in den Selbstmord treiben

Zukunft von HIV ?

3. *Retroviren und Unsterblichkeit* 53

Reverse Transkriptase - eine persönliche Retrospektive! **RT Fig 6**

Reverse Transkriptase von HIV

RNase H - eine molekulare Schere

HIV hat keine Embryonen

Telomerase und ewiges Leben

Viren als Zellkern? **Zelle Fig 7**

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Die Sarkoma Saga

Krebs ohne Onkogene und Onkogene ohne Viren - paradox?

Viren und Krebs

Sonderbare Todesfälle

Retroviren als Lehrmeister der Krebsforschung

Das Myc-Protein und Reaktorunfälle **TV Fig 8**

Tumorsuppressor und Autounfall

Metastasen - wie Zellen laufen lernen

-om und -omics

Krebs ganz anders?

23andMe - bekomme ich Brustkrebs?

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Viren von Bakterien **Phagen und viren Fig 11**

Ein Mantel für die Malerin und ein Journal für den Forscher

Wir sind nicht allein

Kaiserschnitt und Schokoladen-Gen

Viren bei Prostata-Krebs?

Viren statt Eierlegen - wofür sind Retroviren gut?

Ein Virus voller Wespengene

Prionen - es geht auch ohne Gene

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Sputnik – Viren von Viren

XXL Viren - die Pandoraviren

Zwei Guinnessrekorde **Größen Fig 14**

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Manche mögen`s heiß - Archäen und Viren

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Paläovirologie

Verstümmelte Viren **Kuchenstücke Fig 17**

Krebs und Genies durch Viren?

"Frau Mendels“ Mais **Mais Fig 18**

Dornröschen, Fisch und Schnabeltier

Wir haben selber Schuld

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Am Anfang war die RNA **Stammbaum Fig 20**

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Vom Salat bis in die Leber

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Zwillingsviren und wieder ein Exot

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Stumme Gene **V-AV 2 Blumen und Scheren Fig 22**

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Neue Therapien - Imitation von antiviralen Mechanismen

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Kapitelweise zusätzliche Referenzen:

Kap1: Viren mal ganz anders 11

Katzourakis A, Gifford RJ et al.: Macroevolution of Complex Retroviruses. Science 2009; 325:1512
Katzourakis A, et al., Gifford RJ.: Discovery and analysis of the first endogenous lentivirus. PNAS 2007; 104:6261
Photograph 51 Theaterstück von Anna Ziegler
Maddox B.: Rosalind Franklin: The dark lady of DNA. Harper Collins, 2002
Watson JD, Crick F.: Molecular structure of nucleic acids: a structure for DNA. Nature 1974; 248:765
Crick F.: Central dogma of molecular biology. Nature 1970; 227:561
Eigen M.: Error catastrophe and antiviral strategy. PNAS 2002; 99:13374

Kap2: Viren machen krank 30

Influenza: Taubenberger JK, Morens DM.: Influenza viruses: breaking all the rules. MBio. 2013; 4: pii: e00365-13.
Fouchier RA, García-Sastre A, Kawaoka Y.: H5N1 virus: Transmission studies resume for avian flu. Nature 2013; 493:609
Morens DM, Fauci AS.: Emerging infectious diseases. PLoS Pathog. 2013 ;9:e1003467,
Watanabe T. et al.: Characterization of H7N9 influenza A viruses isolated from humans Nature 2013; 501:551
Tan GS, Lee PS et al. Palese P.: Characterization of a broadly neutralizing monoclonal antibody that targets the fusion domain of group 2 influenza a virus hemagglutinin. J Virol. 2014; 88:13580
Bioterrorismus: Lane HC, La Montagne HL, Fauci AS.: Bioterrorism: A clear and present danger. Nature Med. 2001;7:1271
HIV: Weber R, Bossart W et al. Moelling K.: Phase I clinical trial with HIV-1 gp160 plasmid vaccine in HIV-1-infected asymptomatic subjects. Eur J Clin Microbiol Infect Dis. 2001;11:800.
Nackte DNA: Heinzerling LM et al. Moelling K.: Tumor regression induced by intratumoral injection of DNA coding for human interleukin 12 into melanoma metastases in gray horses. J Mol Med 2001;78:692.
Heinzerling L et al. Moelling K.: Intratumoral injection of DNA encoding human interleukin 12 into patients with metastatic melanoma: clinical efficacy. Hum Gene Ther. 2005;1:35.
Lowrie DB et al. Moelling K Silva CL.: Therapy of tuberculosis in mice by DNA vaccination. Nature 1999;400:269.
Mikrobizide: Haase AT.: Early events in sexual transmission of HIV and SIV and opportunities for interventions. Annu Rev Med. 2011; 62:127.

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren*. C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

Karim SS and Karim QA.: Antiretroviral prophylaxis for HIV prevention reaches a key milestone. *Lancet* 2012;379:2047

HIV in den Selbstmord treiben: Matzen K, et al. Moelling K.: RNase H-mediated retrovirus destruction in vivo triggered by oligodeoxynucleotides. *Nat Biotechnol.* 2007; 25:669. Kommentar: Johnson WE.: Assisted Suicide for Retroviruses. *Nat Biotechnol* 2007,25:643

Wittmer-Elzaouk L et al. Moelling K.: Retroviral self-inactivation in the mouse vagina induced by short DNA. *Antiviral Res.* 2009; 82:22.

Heinrich J, Schols D, Moelling K.: A short hairpin loop-structured oligodeoxynucleotide targeting the virion-associated RNase H of HIV inhibits HIV production in cell culture and in huPBL-SCID mice. *Intervirology.* 2012; 5:242

Cohen J.: HIV/AIDS. Subset of CD4 cells may hold key to reaching HIV cure. *Science.* 2013;339:1262.

Cohen J. AIDS research. More woes for struggling HIV vaccine field. *Science.* 2013;340:667.

Cohen J. HIV/AIDS. Early treatment may have cured infant of HIV infection. *Science.* 2013;339:1134.

Tanser F et al.: High Coverage of ART Associated with Decline in Risk of HIV Acquisition in Rural KwaZulu-Natal, South Africa. *Science* 2013, 339: 966

Kap 3: Retroviren und Unsterblichkeit 53

Reverse Transkriptase: Crick F Central dogma of molecular biology. *Nature* 1970; 227:561

Baltimore D RNA-dependent DNA polymerase in virions of RNA tumour viruses. *Nature* 1970; 226:1209

Temin, HM and Mizutani S RNA-dependent DNA polymerase in virions of Rous sarcoma virus. *Nature* 1970; 226:1211.

Mölling K et al.: Association of viral reverse transcriptase with an enzyme degrading the RNA moiety of RNA-DNA hybrids. *Nat New Biol.* 1971; 234:240.

Moelling K.: Reverse transcriptase and RNase H: present in a murine virus and in both subunits of an avian virus. *CSHS Quant Biol.* 1975; 39 Pt 2:969.

Moelling K.: Targeting the retroviral ribonuclease H by rational drug design. *AIDS* 2012;26:1983

Moelling K et al.: Relationship between retroviral replication and RNA interference machineries. *CSH Symposium Quant Biol.* 2006;71:365 Review

Cerritelli SM and Crouch RJ.: Ribonuclease H: The enzymes in eukaryotes. *FEBS J* 2009; 276:1494

Simon DM. and Zimmerly S.: A diversity of uncharacterized reverse transcriptases in bacteria. *Nul. Acid. Res.* 2008; 36:7219

Lampson BC, Inouye M and Inouye S.: Retrons, tmsDNA, and the bacterial genome *Cytogenet Genome Res.* 200; 110:491

RNase H: Tisdale M et al. Moelling K.: Mutations within the RNase H domain of HIV-1 reverse transcriptase abolish virus infectivity. *J Gen Virol.* 1991; 72: 59.

Moelling K.: Targeting the retroviral ribonuclease H by rational drug design. *AIDS* 2012; 26:1983 Review

Broecker F, Andrae K, Moelling K.: Premature activation of the HIV RNase H drives the virus into suicide: a novel microbicide? *ARHR* 2012; 28:1397

Moelling K Broecker F.: The Reverse Transcriptase-RNase H - from viruses to antiviral defense. *New York Acad. Sci* (in press)

Song JJ et al.: Crystal structure of Argonaute and its implications for RISC slicer activity. *Science* 2004; 305:1434

Nowotny M.: Retroviral integrase superfamily: The structural perspective. *EMBO Rep* 2009; 10:144

Hansen J, et al. Moelling K.: Identification of HIV-specific RNase H by monoclonal antibody. *EMBO J* 1988; 7:239

Malik HS and Eickbush TH.: Phylogenetic analysis of ribonuclease H domains suggests a late, chimeric origin of LTR retrotransposable elements and retroviruses. *Genome Res* 2001; 11:1187.

Crow YJ et al Jackson A.: Mutations in genes encoding ribonuclease H2 subunits cause Aicardi-Goutières syndrome and mimic congenital viral brain infection. *Nat Genet.* 2006; 38:910.

Moelling K. et al.: Relationship between retroviral replication and RNA interference machineries. *CSHS Q B* 2006; 71:365

Cerritelli SM and Crouch RJ.: Ribonuclease H: The enzymes in eukaryotes. *FEBS J* 2009; 276:1494

Cerritelli SM et al. Crouch RJ.: Failure to produce mitochondrial DNA results in embryonic lethality in RNase H1 null mice. *Mol Cell* 2003; 11:807

Telomerase: Greider CW Blackburn EH.: Identification of a specific telomere terminal transferase activity in *Tetrahymena* extracts. *Cell* 1985; 43:405.

Noreen F, Heinrich J and Moelling K.: Anti-tumor activity of small double-stranded oligodeoxynucleotide targeting telomerase RNA in malignant melanoma cells. *Oligonucleotides* 2009; **19**:169

Skloot R.: *The immortal Life of Henrietta Lacks*. Crown Publishing Group, NY 2010

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren*. C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

Nandakumar J, Cech TR.: Finding the end: recruitment of telomerase to telomeres. *Nat Rev Mol Cell Biol* 2013; 14:69

Budin I, Szostak JW.: Physical effects underlying the transition from primitive to modern cell membranes. *PNAS* 2011; 108:5249

Kap4: Viren und Krebs 70

Sarkoma Saga: Kaiser J Varmus's Second Act.: *Science* 2013; 342: 4186

Martin GS.: The hunting of the Src. *Nat Rev Mol Cell Biol* 2001; 2: 467

Yeatman TJ, Roskoski R Jr.: A renaissance for SRC. Src protein-tyrosine kinase structure and regulation. *Nat Rev Cancer* 2004; 4: 470

Wunderlich V Kunze P.: Peyton Rous: A Centennial tribute to the founding father of cancer virology. *Current Research* 2012

Onkoproteine: Donner P, Greiser-Wilke I, Moelling K. :Nuclear localization and DNA binding of the transforming gene product of avian myelocytomatosis virus. *Nature* 1982; 296:262

Moelling K, et al.: Serine- and threonine-specific protein kinase activities of purified gag-mil and gag-raf proteins. *Nature* 1984, 312:551

Moelling K et al.: DNA-binding activity is associated with purified myb proteins from AMV and E26 viruses and is temperature-sensitive for E26 ts mutants. *Cell*. 1985; 40:983

Heimann B et al. Moelling K.: Analysis of a tyrosine-specific protein kinase activity associated with the retroviral erbB oncogene product. *Exp Cell Res*. 1985; 161:199

Raf-Kinase: Zimmermann S, Moelling K.: Phosphorylation and regulation of Raf by Akt. *Science* 1999; 286:1741

Rommel C et al. Moelling K, Yancopoulos GD, Glass DJ.: Differentiation stage-specific inhibition of the Raf-MEK-ERK pathway by Akt. *Science*. 1999; 286:1738

Zimmermann S et al. Moelling K, Radziwil G.: MEK1 mediates a positive feedback loop on Raf activity *Oncogene*1997; 15:1503

Dummer R, Flaherty KT.: Resistance patterns with tyrosine kinase inhibitors in melanoma. *Curr Opin Oncol*. 2012,24:150

Das Thakur M et al.: Modelling vemurafenib resistance in melanoma reveals a strategy to forestall drug resistance. *Nature*. 2013; 494:251

Holderfield M, Deuker MM, McCormick F, McMahon M.: Targeting Raf Kinases for cancer therapy: BRAF-mutated melanoma and beyond. *Nature Rev. Cancer* 2014; 14:455 Review

McMahon M.: Parsing out the complexity of RAF inhibitor resistance. *Pigment Cell Melanoma Res*. 2011, 24:361

Sun C. et al.: Bernards R.Reversible and adaptive resistance to BRAF(V600E) inhibition in melanoma. *Nature* 2014;508:118

Donner P, Greiser-Wilke I, Moelling K.: Nuclear localization and DNA binding of the transforming gene product of avian myelocytomatosis virus. *Nature* 1982; 296:262

Liu J, Levens D.: Making myc. *Curr Top Microbiol Immunol*. 2006; 302:1.

Tumorsuppressor: Gateff E.: Malignant neoplasms of genetic origin in *Drosophila melanogaster*. *Science* 1978; 200:1448

Gateff E et al.: Functional analysis of *Drosophila* developmental genes instrumental in tumor suppression. *In Vivo*. 1996; 10:211-5.

Sherr CJ, McCormick F.: The RB and p53 pathways in cancer. *Cancer Cell*. 2002; 2:103

Yi L, Lu C, et al. Levine AJ.: Multiple roles of p53-related pathways in somatic cell reprogramming and stem cell differentiation. *Cancer Res*. 2012; 72:5635

Radziwill G et al. Moelling K.: Regulation of c-Src by binding to the PDZ domain of AF-6. *EMBO J*. 2007; 26:2633

Wang T et al. Haussler D.: Species-specific endogenous retroviruses shape the transcriptional network of the human tumor suppressor protein p53. *PNAS* 2007; 104:18613

Baumgartner M et al Moelling K.: c-Src-mediated epithelial cell migration and invasion regulated by PDZ binding site. *MCB* 2008; 28:642

Vogelstein B et al.: Cancer Genome Landscape. *Science* 2013; 339:1546

Kap5: Viren machen nicht krank 105

Beijerinck MW.: Concerning a contagium vivum fluidum as cause of the spot disease of tobacco leaves *Phytopathological Classics*, No7 Ed by Johnson J *Am Phyto. Soc* 1898

Rohwer F, Barott K.: Viral information. *Biol Philos*. 2013; 28:283

Delwart E.: A roadmap to the human virome. *PLoS Pathog*. 2013;9:e1003146.

Virgin HW.: The virome in mammalian physiology and disease. *Cell* 2014; 157:142

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren.* C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

- Wu Z et al.: Virome analysis for identification of novel mammalian viruses in bat species from Chinese provinces. *J Virol.* 2012; 86: 10999
- Edwards RA, Rohwer F.: Viral metagenomics. *Nat Rev Microbiol* 2005; 3: 504.
- Zarowiecki M.: Metagenomics with guts. *Nat Rev Microbiol.* 2012; 10:674
- Turrone F et al.: Human gut microbiota and bifidobacteria: from composition to functionality. *Antonie van Leeuwenhoek* 2008; 94:35
- Turnbaugh PJ et al. Gordon JL.: The effect of diet on the human gut microbiome: a metagenomic analysis in humanized gnotobiotic mice. *Sci Transl Med.* 2009;1(6):6ra14.
- Qin J et al.: A human gut microbial gene catalogue established by metagenomic sequencing. *Nature* 2010; 464:59
- Mokili JL, Rohwer F, Dutilh BE.: Metagenomics and future perspectives in virus discovery. *Curr Opin Virol.* 2012; 2:63
- Kaiserschnitt:** Nübel U, et al., Kube M, Bröcker F, Moelling K et al. MRSA transmission on a neonatal intensive care unit: epidemiological and genome-based phylogenetic analyses. *PLoS One.* 2013;8(1):e54898.
- Schokoladengen:** Brüssow H.: Nutrition, population growth and disease: a short history of lactose. *Environ Microbiol.* 2013; 15:2154
- Itan Y et al. Thomas MG.: A worldwide correlation of lactase persistence phenotype and genotypes. *BMC Evol Biol.* 2010; 10:36.
- Gerbault P et al. Thomas MG.: How long have adult humans been consuming milk? *IUBMB Life* 2013; 65: 983
- Prostata:** Kearney M et al. Coffin JM.: Multiple sources of contamination in samples from patients reported to have XMRV infection. *PLoS One.* 2012;7:e30889.
- Lombardi et al. Detection of an infectious retrovirus, XMRV, in blood cells of patients with chronic fatigue syndrome. *Science* 2009; 326:585
- Plazenta:** Mi S et al.: Syncytin is a captive retroviral envelope protein involved in human placental morphogenesis. *Nature* 2000; 403:785
- Weiss RA Stoye JP.: Virology. Our viral inheritance. *Science.* 2013;340:820
- Roossinck MJ.: The good viruses: viral mutualistic symbioses. *Nat Rev Microbiol.* 2011;9:99
- Roossinck MJ.: Lifestyles of plant viruses. *Philos Trans R Soc Lond B Biol Sci.* 2010; 365:1899
- D'Hont et al.: The banana (*Mus acuminata*) genome and the evolution of monocotyledonous plants. *Nature* 2012; 488:213
- Polydnavirus:** Bezier A et al.: Polydnaviruses of Braconid Wasps derive from an ancestral Nudivirus *Science* 2009; 323: 926
- Strand MR Burke GR.: Polydnaviruses as symbionts and gene delivery systems.2012, *PLoS Pathog* 8:e1002757.
- Prionen:** Mahal SP et al. Weissmann C.: Transfer of a prion strain to different hosts leads to emergence of strain variants. *PNAS* 2010; 107:22653
- Gargiulo-Monachelli GM et al.: Regional spread pattern predicts survival in patients with sporadic amyotrophic lateral sclerosis. *Eur J Neurol.* 2012; 19:834

Kap6: Viren – gross, grösser, am grössten! Gigaviren 128

- Van Etten J.: Another really, really big virus. *Viruses* 2011; 3:32
- Van Etten JL Lane LC Dunigan DD.: DNA Viruses: The Really Big Ones (Giruses). *Annual Review of Microbiol* 2010; 64:83
- Raoult D, Forterre P.: Redefining viruses: lessons from Mimivirus. *Nat Rev Microbio* 2006; 6:315
- Raoult D, et al. Claverie JM.: The 1.2-megabase genome sequence of Mimivirus. *Science* 2004; 306:1344
- Boyer M, et al. Raoult D.: Mimivirus shows dramatic genome reduction after intraamoebal culture. *PNAS* 2011; 108:10296
- Moreira D, Brochier-Armanet C.: Giant viruses, giant chimeras: the multiple evolutionary histories of Mimivirus genes. *Evol Biol.* 2008; 8:12.
- Vardi A et al.: Viral glycosphingolipids induce lytic infection and cell death in marine phytoplankton. *Science.* 2009; 326:861
- Vardi A** et al.: Host-virus dynamics and subcellular controls of cell fate in a natural coccolithophore population. *Proc Natl Acad Sci U S A.* 2012; 109:19327
- Raoult D et al. Claverie JM.: The 1.2 megabase genome sequence of Mimivirus. *Science.* 2004; 306:1344.
- Philippe N et al. Claverie JM, Abergel C.: Pandoraviruses: amoeba viruses with genomes up to 2.5 Mb reaching that of parasitic eukaryotes. *Science.* 2013; 341:281
- La Scola B, et al. Raoult D.: A giant virus in amoebae. *Science* 2003; 299:2033
- Raoult D et al. Claverie JM.: The 1.2-Mb Genome Sequence of Mimivirus. *Science* 2004; 306:1344
- Raoult D, Forterre P.: Redefining viruses: lessons from Mimivirus. *Nat Rev Microbiol* 2008; 6:315

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren*. C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

Virophagen, Sputnik: Yutin N, Raoult D. and Koonin EV.: Virophages, polintons, and transpovirons: a complex evolutionary network of diverse selfish genetic elements with different reproduction strategies. *Virology J.* 2013; 1:15

Fischer MG, Suttle CA.: A Virophage at the Origin of Large DNA Transposons *Science* 2011; 332:231

Slimani M, Pagnier I, Raoult D, La Scola B.: Amoebae as battlefields for bacteria, giant viruses, and virophages. *J Virol.* 2013; 87:4783

Schnable PS et al.: The B73 maize genome: complexity, diversity, and dynamics. *Science* 2009, 326:1112

Bézier A et al.: Polydnviruses of Braconid: Wasps Derive from an Ancestral Nudivirus.

Science 2009; 323:926

Pandoraviren: Philippe N et al.: Pandoraviruses: amoeba viruses with genomes up to 2.5 Mb reaching that of parasitic eukaryotes. *Science.* 2013; 341:281

Forterre, P.: The origin of viruses and their possible roles in major evolutionary transitions. *Virus Res.* 2006; 117:5

Slimani M, et al.: Amoebae as battlefields for bacteria, giant viruses, and virophages. *J Virol.* 2013;87:4783

Amöben: Huber H et al. Stetter KO.: A new phylum of Archaea represented by a nanosized hyperthermophilic symbiont. *Nature* 2002; 417:63

Augen: Yutin N and EV Koonin EV.: Proteorhodopsin genes in giant viruses. *Biology Direct* 2012, 7:34

Archäen: Stetter KO.: A brief history of the discovery of hyperthermophilic life. *Biochem Soc Trans.* 2013; 41:416

Podar M et al Stetter KO.: A genomic analysis of the archaeal system *Ignicoccus hospitalis*-Nanoarchaeum equitans. *Genome Biol.* 2008; 9:R158.

Mochizuki T et al. Prangishvili D.: Archaeal virus with exceptional virion architecture and the largest single-stranded DNA genome. *PNAS* 2012; 109,13386

Kap7: Lauter tote Viren – im Erbgut 146

Lander ES et al.: Initial sequencing and analysis of the human genome. *Nature* 2001; 409:860

Wang T, Haussler D.: Species-specific endogenous retroviruses shape the transcriptional network of the human tumor suppressor protein p53. *PNAS* 2007; 104:18613

Broecker F et al Moelling K.: A Human Endogenous Retrovirus HERV-K Transcript Inhibits Apoptosis. *Nature comm* (under modify)

Weiss RA.: The discovery of endogenous retroviruses. *Retrovirology*,2006;3:67

Coffin JM, Hughes SH, Varmus H.: *Retroviruses*. Cold Spring Harbor Laboratory Press 1997

Jern P, Coffin JM.: Effects of retroviruses on host genome function. *Annu Rev Genet*2008; 42:709

Belyi VA, Levine AJ, Skalka AM.: Sequences from ancestral single-stranded DNA viruses in vertebrate genomes: the parvoviridae and circoviridae are more than 40 to 50 million years old. *J Virol.* 2010; 84:12458

Bishop KN, Bock M, Towers G, Stoye JP.: Identification of the regions of Fv1 necessary for murine leukemia virus restriction. *J Virol.* 2001; 75: 5182

Phoenix: Katzourakis A et al Gifford RJ.: Discovery and analysis of first endogenous lentivirus. *PNAS* 2007; 10: 6261

Katzourakis A, Gifford RJ.: Endogenous Viral Elements in Animal Genomes. *PLoS Genet* 2010; 6:e1001191

Dewannieux M et al. Heidmann T.: Identification of an infectious progenitor for the multiple-copy HERV-K human endogenous retroelements. *Genome Res* 2006; 16:1548

Muotri AR et al. Gage FH.: Somatic mosaicism in neuronal precursor cells mediated by L1 retrotransposition. *Nature* 2005; 435:903

Koala Bärchen: Katzourakis A. et al.: Macroevolution of complex retroviruses *Science* 2009; 325,1512

Tarlinton RE, Meers J, Young PR.: Retroviral invasion of the koala genome. *Nature* 2006; 442:79

Paläovirologie: Belyi VA, Levine AJ, Skalka AM.: Sequences from ancestral single-stranded DNA viruses in vertebrate genomes: the parvoviridae and circoviridae are more than 40 to 50 million years old. *J Virol* 2010; 84:12458

Belyi VA, Levine AJ, Skalka AM.: Unexpected inheritance: multiple integrations of ancient bornavirus and ebolavirus/marburgvirus sequences in vertebrate genomes. *PLoS Pathog.* 2010 Jul 29;6:e1001030.

Horie M et al. Coffin JM Tomonaga K.: Endogenous non-retroviral RNA virus elements in mammalian genomes. *Nature.* 2010 ; 463:84

Gifford RJ Katzourakis A et al.: A transitional endogenous lentivirus from the genome of a basal primate and implications for lentivirus evolution. *PNAS* 2008;105: 20362

Cui J, Holmes EC.: Evidence for an endogenous papillomavirus-like element in the platypus genome. *J Gen Virol.* 2012; 93:1362

Verstümmelte Viren: Lander ES et al.: Initial sequencing and analysis of the human genome. *Nature* 2001; 409:860

Cordaux R, Batzer MA.: The impact of retrotransposons on human genome evolution. *Nat Rev Genet* 2009;

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren.* C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

10:691

SnapShot, Transposons, Cell 2008; 135,192

Singer T et al. Gage FH.: LINE-1 retrotransposons: mediators of somatic variation in neuronal genomes?

Trends in Neurosciences 2010; 33:345

Muotri AR et al. Gage FH.: L1 retrotransposition in neurons is modulated by MeCP2. Nature 2010;468:443.

Ng SY, Lin L, Soh BS, Stanton LW.: Long noncoding RNAs in development and disease of the central nervous system. Trends Genet. 2013; 29:461

Pollard KS et al. Haussler D.: An RNA gene expressed during cortical development evolved rapidly in humans. Nature 2006; 443:167

Marchetto MCN et al. Gage FH, Muotri AR.: A Model for Neural Development and Treatment of Rett Syndrome Using Human Induced Pluripotent Stem Cells. Cell 2010; 143:527

Frau Mendel B McClintock: Harshey RM.: The Mu story: how a maverick phage moved the field forward. Mobile DNA 2012, 3:21

Orlando L and Willerslev E.: An epigenetic window into the past. Science 345,511(2014)

Pembrey M Saffery R. Bygren LO, Network in Epigenetic Epidemiology: Human transgenerational responses to early-life experience: potential impact on development, health and biomedical research. J med Genet 2014;51:563

Collins SM, Kassam Z, Bercik P.: The adoptive transfer of behavioral phenotype via the intestinal microbiota: experimental evidence and clinical implications Curr Opin Microbiol. 2013, 16:240

Orlando L and Willerslev E.: An epigenetic window into the past. Science 2014; 345: 511

Arabidopsis Genome Initiative.: Analysis of the genome sequence of the flowering plant Arabidopsis thaliana. Nature 2006; 441:469

Dornröschen: Luft FC et al.: Sleeping Beauty jumps to new heights. Mol. Med 2010;88:641

Mates L et al. Molecular evolution of a novel hyperactive Sleeping Beauty transposase enables robust stable gene transfer in vertebrates. Nat Genet. 2009; 41:753

Fisch: Nikaido M et al. Coelacanth genomes reveal signatures for evolutionary transition. Genome Res. 2013; 23:1740

Amemiya CT et al.: The African coelacanth genome provides insights into tetrapod evolution Nature 2013; 496:311

Lattenzaun mit Zwischenraum: Mattick JS.: The central role of RNA in human development and cognition. FEBS Letters 2010; 585:1600

Chabannes M et al.: Three infectious viral species lying in wait in the banana genome. J Virol. 2013;87:8624

Droc G et al.: The banana genome hub. Database (Oxford) 2013;2013:bat035.

Bartel DP.: MicroRNAs Target recognition and regulatory functions. Cell 2009;136:215

Belfort M.: PNAS Sackler Symposium meeting Report 2012

Zimmerly et al.: GroupII intron Mobility, Cell 1995; 82:545

Beauregard A Curcio MJ Belfort M.: The take and give between RT elements and their hosts. Ann Rev. Genet. 2008;42,587

Lambowitz AM and Zimmerly S.: Group II Introns: Mobile Ribozymes that Invade DNA CSH Perspect Biol. 2011;3:a003616

Lander E et al.: Genome of the marsupial Monodelphis domestica reveals innovation in non-coding sequences; Nature 2007; 447,167

Galej WP et al.: Crystal structure of Prp8 reveals active site cavity of the slicosome Nature2013; 493:638

Pena V et al. Lührmann R, Wahl MC.: Structure and function of an RNase H domain at the heart of the spliceosome. EMBO J 2008; 27:2929

ENCODE: Venter C.: Multiple personal genomes await, Nature 2010, 464:676

Katsnelson A.: Twin study surveys genome for cause of multiple sclerosis Nature 2010; 464, 1259

Baranzini SE et al.: Genetic risk and a primary role for cell-mediated immune mechanisms in multiple sclerosis. Nature 2010; 464:1351

Fukai E, Umehara Y et al.: Derepression of the Plant Chromovirus LORE1 Induces Germline Transposition in Regenerated Plants. PLoS Genet 2010; 6(3): e1000868.

Kap 8: *Stammen wir von Viren ab – Evolution?* 178

RNA: Eigen M Error catastrophe and antiviral strategy. PNAS 2002; 99:13374

Biebricher CK, Eigen M.: What is a quasispecies, Curr Top Microbiol Immunol, 2006;299:1

Biebricher CK, Eigen M.: The error threshold Virus Res 2005; 107:117

Lincoln TA, Joyce GF.: Self-sustained replication of an RNA enzyme. Science 2009; 323:1229

Doudna JA and Szostak JW.: RNA-catalysed synthesis of complementary-strand RNA Nature 1989; 33:519

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren.* C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

- Viroide:** Steger G et al. Sanger L and Riesner D.: Structure of viroid replicative intermediates: physico-chemical studies on SP6 transcripts of cloned oligomeric potato spindle tuber viroid. *Nucl Acids Res.* 1986; 14:9613
- Villarreal LP: The Widespread Evolutionary Significance of Viruses. In: Domingo E, Parish C, Holland J (eds).: *Origin and Evolution of Viruses.* Academic Press, London 2008; 477-516
- Villarreal LP.: *Viruses and the Evolution of life.* American Society of Microbiology Press, Washington DC 2005
- Tsagris EM, et al.: Viroids. *Cell Microbiol* 2008;10:2168
- Cech TR et al.: Hammerhead nailed down. *Nature* 1994; 372,39
- Flores R et al. Elena SF.: Viroids:Survivors from the RNA world. *Annu.Rev.Microbiol.* 2014; 68:395
- Koonin EV, Dolja VV.: A virocentric perspective on the evolution of life *Curr Opin Virol.* 2013; 5:546
- Lambowitz AM Zimmerly S.: Mobile group II introns. *Annual Review of Genetics* 2004; 38:1.
- Martinez-Abarca F and Toro N.: GroupII introns in the bacterial world *Mol.Microbiol* 2002; 38,917
- Forterre P.: Defining life: The virus viewpoint. *Origins of life and Evolution of Biospheres* 2010; 40:51
- Zirkulare RNA:** Hansen TB et al. Natural RNA circles function as efficient microRNA sponges. *Nature* 2013; 495 384
- Hansen TB, Kjems J, Damgaard CK.: Circular RNA and miR-7 in cancer. *Cancer Res.* 2013; 73:5609
- Memczak S et al. Rajewsky N.: Circular RNAs are a large class of animal RNAs with regulatory potency, *Nature* 2013:495:333
- Wilusz JE and Sharp PA.: A circuitous Route to non-coding RNA *Science* 2013;340:44
- Navarro B et al. Flores R, Di Serio F.: Viroids: how to infect a host and cause disease without encoding proteins.*Biohemie* 2012; 94:1474
- Hammann C, Steger G.: Viroid-specific small RNA in plant disease. *RNA Biol.* 2012;9:809
- Bartel DP MicroRNAs Target recognition and regulatory functions. *Cell* 2009;136:215
- Eilus JE and PA Sharp A.: circuitous Route to non-coding RNA *Science* 2013;340:440
- Proteine-Hakelnadel:** Moore PB, Steitz TA.: The ribosome revealed. *Trends in Biochemical Sciences.* 2005; 30:281
- Ma BG et al. Zhang HY.: Characters of very ancient proteins. *Biochem Biophys Res Commun* 2008; 366:607
- Yonath A: Polar bears, antibiotics, and the evolving ribosome (Nobel Lecture). *Angew Chem Int Ed Engl.* 2010; 49:4341
- Anstandsdame:** Muller G et al.: Amino acid requirements of the nucleocapsid protein of HIV-1 for increasing catalytic activity of a Ki-ras ribozyme in vitro. *J Mol Biol* 1994, 242:422
- Kleebblatt:** Dreher TW.: Viral tRNAs and tRNA-like structures. *Wiley Interdiscip Rev RNA.* 2010; 1:402
- Hammond JA, Rambo RP, Filbin ME, Kieft JS Comparison and functional implications of the 3D architectures of viral tRNA-like structures. *RNA.* 2009;15:294
- Witzany G (ed) *Viruses: Essential Agents of Life,* Springer page 414. The Two halves of tRNA.
- Pflanzenviren, Hepatitis-Delta-Virus:** Braza R and Ganem D.: The HDAg from two reading frames may be of human origin. *Science*1996; 274:90
- Taylor J, Pelchat M.: Origin of hepatitis delta virus. *Future Microbiol* 2010; 5:393
- Flores R, Ruiz-Ruiz S, Serra P.: Viroids and hepatitis delta virus. *Semin Liver Dis* 2012; 32:201
- Salehi-Ashtiani K, Luptak A, Litovchick A, Szostak JW A genomewide search for ribozymes reveals an HDV-like sequence in the human CPEB3 gene *Science* 2006;313:1788
- Webb CH et al.: Widespread occurrence of self-cleaving ribozymes. *Science* 2009;326:953
- Hammann C et al.: The ubiquitous Hammerhead ribozyme *RNA* 2012;18:871
- Liu M et al Miller JF. : Bordetella phage on MTD *Science* 2002; 295:2091
- Doulatov S et al. Miller JF.: Tropism switching in Bordetella bacteriophage defines a family of diversity-generating retroelements. *Nature.* 2004;431:476.
- Liu M et al. Miller JF.: Genomic and genetic analysis of Bordetella bacteriophages encoding reverse transcriptase-mediated tropism-switching cassettes. *J Bacteriol.* 2004;186:1503
- Tabakviren:** Buck KW.: Replication of tobacco mosaic virus RNA .*Philos Trans R Soc Lond B Biol Sci.* 1999; 354:613
- Beijerinck MW.: Concerning a contagium vivum fluidum as cause of the spot disease of tobacco leaves *Phytopathological Classics, No7* Ed by Johnson J *Am Phyto. Soc* 1898
- Dreher TW.: Viral tRNAs and tRNA-like structures. *Wiley Interdiscip Rev RNA.* 2010; 1:402
- Hammond JA, Rambo RP, Filbin ME, Kieft JS Comparison and functional implications of the 3D architectures of viral tRNA-like structures. *RNA.* 2009;15:294
- Moelling K.: What contemporary viruses tell us about evolution: a personal view. *Arch Virol.* 2013, 158:1833
- Witzany G (ed).: *Viruses: Essential Agents of Life,* Springer page 414 The Two halves of tRNA.

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren*. C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

Mitrovic J et al Moelling K, Kube M.: Generation and analysis of draft sequences of Stolbur Phytoplasma from DNA templates. *Mol Microbiol Biotech* 2014; 24:1

Georgiades K et al.: Gene gain and loss events in Rickettsia and Oriental species *Biology Direct* 2011; 6:6

Roossinck MJ.: Lifestyles of plant viruses. *Philos Trans R Soc Lond B Biol Sci.* 2010; 365:1899.

Zwillingsviren: Krupovic M, Ravantti JJ, Bamford DH.: Geminiviruses: a tale of a plasmid becoming a virus. *BMC Evol Biol.* 2009; 9:112.

Exot: Mitrovic J Siewert, Duduk, B, Hecht J, Molling K, Broecker, F. et al.: (2014) Generation and Analysis of Draft Sequences of 'Stolbur' Phytoplasma from Multiple Displacement Amplification Templates. *Journal of Molecular Microbiology and Biotechnology* 24: 1-11.

Kap 9: Viren und antivirale Verteidigung 203

Isaacs A Lindenmann J.: *Virus Interference. I. The Interferon*. In: *Proceedings of the Royal Society of London. Series B - Biological Sciences.* 147, Nr. 927, 1957, S. 258-267

siRNA: Wilson RC and Doudna JA.: Molecular mechanisms of RNA interference. *Annu Rev Biophys* 2013; 42:217

Matskevich AA, Moelling K.: Dicer is involved in protection against influenza A virus infection. *J Gen Virol.* 2007; 88:2627

Matskevich AA, Moelling K.: Stimuli-dependent cleavage of Dicer during apoptosis. *Biochem J.* 2008 Jun 15;412(3):527-34.

CRISPR: Hsu PD, Lander ES, Zhang F.: Development and applications of CRISPR-Cas9 for genome engineering. *Cell.* 2014; 157:1262

Sorek R, Kunin V, Hugenholtz P CRISPR - a widespread system that provides acquired resistance against phages in bacteria and archaea. *Nat Rev Microbiol* 2008; 6:181

Horvath P, Barrangou R (2010) CRISPR/Cas9, the Immune System of Bacteria and Archaea. *Science* 2010; 327:167

Sternberg SH et al.: DNA interrogation by the CRISPR RNA-guided endonuclease Cas9. *Nature* 2014; 507:62

Doudna JA, **Charpentier E.**: Genome editing. The new frontier of genome engineering with CRISPR-Cas9. *Science.* 2014; 346(6213):1258096 (Nov/Dec2014)

Moelling K, Broecker F.: The Reverse Transcriptase-RNase H - from viruses to antiviral defense. *Annals New York Acad. Sci* (in press)

Moelling K et al.: Silencing of HIV by hairpin-loop-structured DNA oligonucleotide (siDNA) *FEBS Letters* 2006; 580:3545

Swarts DC et al.: DNA-guides DNA interference by a procaryotic Argonaute *Nature* 2014; 507: 258

Zhou L et al.: Transposition of hAT elements links transposable elements and V(D)J recombination. *Nature.* 2004; 432:995

Bateman A Eddy SR Chothia C.: Members of the immunoglobulin superfamily in bacteria. *Protein Sci.*1996; 5:1939

Beauregard A, Curcio MJ, Belfort M.: The take and give between retrotransposable elements and their hosts. *Annu Rev Genet* 2008; 42:587

Antisense: Isselbacher KJ.: Retrospective. Paul C. Zamecnik (1912-2009). *Science* 2009; 326:1359.

Citron M, Schuster H.: The c4 repressors of bacteriophages P1 and P7 are antisense RNAs. *Cell* 1990; 62:591

Kap10: Phagen als Retter 225

Zhang T, Breitbart M, Rohwer F, Ruan Y.: RNA viral community in human feces: prevalence of plant pathogenic viruses. *PLoS Biol* 2006; 4:e3

Reardon S.: Phage therapy gets revitalized: *Nature* 2014; 510:15

Bourdin G et al. Brüssow H.: Amplification and purification of T4-like escherichia coli phages for phage therapy: from laboratory to pilot scale. *Appl Environ Microbiol.* 2014; 80:1469

Brüssow H.: Phage therapy: quo vadis? *Clin Infect Dis.* 2014; 58:535

Ein Fall von ... Stuhltransfer: Broecker F et al. Moelling K.: Analysis of the Intestinal Microbiota of a Recovered *Clostridium difficile* Patient after Fecal Transplantation. *Digestion* 2013; 88:243

Mole N.: FDA gets to grips with faeces. *Nature* 2013; 498:147

O'Horo JC et al.: Treatment of recurrent *Clostridium difficile* infection: a systematic review. *Infection* 2014; 42:43.

van Nood E, Dijkgraaf MG, Keller JJ. Duodenal infusion of feces for recurrent *Clostridium difficile*. *N Engl J Med.* 2013; 368:407 and 2145

Gough E, Shaikh H, Manges AR.: Systematic review of intestinal microbiota transplantation (fecal bacteriotherapy) for recurrent *Clostridium difficile* infection. *Clin. Infect. Dis.* 2011; 53:994

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren*. C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

- Bygren LO, et al. Sjöström M.: Change in paternal grandmothers' early food supply influenced cardiovascular mortality of the female grandchildren. *BMC Genet.* 2014; 15:12.
- Vanessa K. et al. Jeffrey I. Gordon¹, Gut Microbiota from Twins Discordant for Obesity Modulate Metabolism in Mice. *Science* 2013; 341:1079 **Dünn steckt an!!!**
- Collins SM, Kassam Z, Bercik P.: The adoptive transfer of behavioral phenotype (anxiety) via the intestinal microbiota: experimental evidence and clinical implications *Curr Opin Microbiol.* 2013, 16:240
- Stower H.: Medical genetics: Narrowing down obesity genes. *Nat Med.* 2014; 20:349
- Lepage P et al Dore J.: A metagenomic insight into our gut's microbiome. *Gut* 2013; 62:146, Review
- Smemo S.: Obesity-associated variants within FTO form long-range functional connections with IRX3. *Nature* 2014; 507:371
- Blaser M, Bork P et al.: The microbiome explored: recent insights and future challenges. *Nat Rev Microbiol.* 2013; 11:213
- Tobi EW. et al. Heijmans BT.: DNA methylation differences after exposure to prenatal famine are common and timing- and sex-specific. *Human Mol Gen* 2009; 18:4046 (Dutch Famine Study)
- Bygren LO et al.: Change in paternal grandmothers' early food supply influenced cardiovascular mortality of the female grandchildren. *BMC Genet* 2014; 15:12
- Grossniklaus U et al. Lindquist S.: Transgenerational epigenetic inheritance: how important is it? *Nat Rev Genet.* 2013; 14:228
- Pembrey ME, Bygren LO et al.: Sex-specific, male-line transgenerational responses in humans. *Eur J Hum Genet.* 2006 ; 14:159
- Epigenetik Agouti Maus:** Dolinoy DC et al.: The agouti mouse model: an epigenetic biosensor for nutritional and environmental alterations on the fetal epigenome. *Nutr Rev.* 2008, 66 Suppl 1:S7-11.
- Rassoulzadegan M et al. Cuzin F.: RNA-mediated non-mendelian inheritance of an epigenetic change in the mouse. *Nature.* 2006; 441:469
- Sander DM/Szabo S et al Garry RF.: Involvement of human intracisternal A-type retroviral particles in autoimmunity. *Microsc Res Tech.* 2005;68:222
- Painter RC et al.: Transgenerational effects of prenatal exposure to the Dutch famine on neonatal adiposity and health in later life (2008) in: *Repro Toxicol* 20,345, 2005
- Lynn..... Adipositas, Food and nutrition:** Celis-Morales C et al. Daniel H et al. Design and baseline characteristics of the Food4Me study: a web-based randomised controlled trial of personalised nutrition in seven European countries. *Genes Nutr.* 2015;10:450.
- Martin C, Zhang Y, Tonelli C, Petroni K. Plants, diet, and health. ATHENA Project, *Annu Rev Plant Biol.* 2013;64:19-46.
- Waterland RA and Jirtle RL.: Transposable Elements: Targets for Early Nutritional Effects on Epigenetic Gene Regulation. *Mol. Cell Biol.* 2003; 23:5293
- Slotkin RK, Martienssen R.: Transposable elements and the epigenetic regulation of the genome *Nature Reviews Genetics* 2007; 8: 272
- Pfeifer A et al. Verma IM.: Transgenesis by lentiviral vectors: lack of gene silencing in mammalian embryonic stem cells and preimplantation embryos. *PNAS* 2002; 99:2140
- Frayling TM.: Genome-wide association studies provide new insights into type 2 diabetes aetiology. *Nat Rev Genet.* 2007; 8:657 Review (FTO gene) and *Science* 2007; 316, 889
- Brüssow H, Parkinson SJ. You are what you eat. *Nat Biotechnol.* 2014; 32:243
- Elba Würmchen:** Kleiner M. et al. N. Dubilier.: Metaproteomics of a Gutless Marine Worm and its Symbiotic Microbial Community Reveal Unusual Pathways for Carbon and Energy Use. *PNAS* 2012; 109:1
- Dubilier N, Bergin C, Lott C.: Symbiotic diversity in marine animals: the art of harnessing chemosynthesis. *Nat Rev Micro* 2008; 6:725
- McCutcheon JP, Moran NA.: Extreme genome reduction in symbiotic bacteria. *Nat Rev Micro* 2012; 10:13
- Merhej V et al. Raoult D.: Massive comparative genomic analysis reveals convergent evolution of specialized bacteria. *Biology Direct* 2009; 4:13
- Link: Ökospäre: <http://www.amazon.de/Ecosphere-Original-nach-Kleine-Kugel>

Kap11: Viren zur Gentherapie 249

- Baltimore D.: Gene therapy. Intracellular immunization. *Nature* 1988; 335:39
- Ott MG et al. Grez M.: Correction of X-linked chronic granulomatous disease by gene therapy *Nat med* 2006; 12:401
- Barouch DH et al.: Vaccine protection against acquisition of neutralization-resistant SIV challenges in rhesus monkeys. *Nature* 2012; 482:89
- HIV in Internat. AIDS Vaccine Initiative (IAVI) Reports 2012; 16.
- Frahm N et al.: Human adenovirus-specific T cells modulate HIV-specific T cell responses to an Ad5-vectored HIV-1 vaccine *J Clin Invest.* 2012; 122:359

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren*. C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

- Fischer A et al.: Severe combined immunodeficiency. A model disease for molecular immunology and therapy. *Immunol Rev.* 2005; 203:90
- Li MJ et al. Rossi JJ.: Inhibition of HIV-1 infection by lentiviral vectors expressing Pol III-promoted anti-HIV RNAs. *Mol Ther.* 2003; 8:196
- Rossi JJ, June CH, Kohn DB.: Genetic therapies against HIV. *Nat Biotechnol.* 2007; 25:144
- Burnett JC, Rossi JJ. RNA-based therapeutics: current progress and future prospects. *Nucleic Acids Res.* 1994; 22: 301
- Pachuk CJ et al.: Selective cleavage of bcr-abl chimeric RNAs by a ribozyme targeted to non-contiguous sequences. *Nucleic Acids Res.* 1994; 22:301
- Lipizzaner und undichte Tür:** Heinzerling L et al. Moelling K.: Intratumoral injection of DNA encoding human interleukin 12 into patients with metastatic melanoma: clinical efficacy. *Hum Gene Ther.* 2005; 16:35.
- Heinzerling L et al. Moelling K.: Tumor regression induced by intratumoral injection of DNA coding for human interleukin 12 into melanoma metastases in gray horses. *J Mol Med* 2001;78:692
- Mückenimpfung:** Bian G et al.: Wolbachia invades *Anopheles stephensi* populations and induces refractoriness to *Plasmodium* infection. *Science.* 2013;340:748.
- Pflanzen:** Fresco LO.: The GMO Stalemate in Europe, *Science* 2012; 33: 883
- Pappas KM.: Cell-cell signaling and the *Agrobacterium tumefaciens* Ti plasmid copy number fluctuations. *Plasmid* 2008; 60:89
- Thomson H.: Plant science: The chestnut resurrection. *Nature* 201; 490:22
- Potrykus I.: Regulation must be revolutionized. *Nature.* 2010;466:561.
- D'Hont et al.: The banana (*Mus acuminata*) genome and the evolution of monocotyledonous plants, *Nature* 2012; 488:213
- Pilze:** Goffeau A et al.: Life with 6000 genes. *Science.* 1996; 274:546
- Goffeau A.: Genomics: multiple moulds. *Nature.* 2005; 438:1092
- Roossinck MJ.: The good viruses: viral mutualistic symbiose *Nat. Reviews Microbiol* 2011; 9:99
- Stammzellen:** Qian L et al.: In vivo reprogramming of murine cardiac fibroblasts into induced cardiomyocytes. *Nature.* 2012; 485:593
- Hydra:** Chapman et al.: The dynamic genome of Hydra *Nature* 2010; 464:592
- Warren WC et al.: Genome analysis of the platypus reveals unique signatures of evolution. *Nature* 2008;453: 175
- Schwämme:** Renard E et al Eresovsky AV.: Origin of the neuro-sensory system: new and expected insights from sponges. *Integrative Zoology* 2009; 4: 294
- Dritter Zahn:** Arany P.R.: Photoactivation of endogenous latent TGF-beta1 directs stem cell differentiation for regeneration. *Sc TR Med* 2014; 238:238

Kap12: Viren und die Zukunft 275

- Synthetische biologie:** Glass JI et al. Venter C.: Essential genes of a minimum bacterium. *PNAS* 2006; 103:425
- Gil R. et al.: Determination of the core of a minimal bacterial gene set. *Microbiol Mol Rev.* 2004; 68:518
- Nystedt B. et al.: The Norway spruce genome sequence and conifer genome evolution, *Nature.* 2013, 497:579
- Moreira D, Lopez-Garcia P.: Ten reasons to exclude viruses from the tree of life. *Nat Rev Microbiol* 2009; 7:306
- Huber H, et al., Stetter KO.: A new phylum of Archaea represented by a nanosized hyperthermophilic symbiont. *Nature* 2002; 2:417
- Wer war zuerst da – Virus oder Zelle?** Moelling K.: Are viruses our oldest ancestors? *EMBO Reports.* 2012; 13:1033
- Villarreal LP.: The Widespread Evolutionary Significance of Viruses. In: Domingo E, Parish C, Holland J (eds): *Origin and Evolution of Viruses.* Academic Press, London, 2008, pp 477-516
- Villarreal LP, Witzany G.: Viruses are essential agents within the roots and stem of the tree of life. *J Theor Biol* 2010; 262:698
- Schnell-Läufers und Trödler:** Koonin E, Senkevich T, Dolja V The ancient Virus World and evolution of cells. *Biology Direct* 2006; 1:29
- Moelling K.: What contemporary viruses tell us about evolution - a personal view. *Archives Virol* 2013; 158:1833
- Koonin EV.: On the Origin of Cells and Viruses. *Annals of the NY Acad. of Sciences* 2009; 1178:47
- Koonin EV and Krupovic M.: Evolution of adaptive Immunity from transposable elements combined with innate immune systems. *Nature Rev Genetics* Dec 2014

Referenzen K. Moelling: *Supermacht des Lebens -Reisen in die erstaunliche Welt der Viren.* C.H. Beck Verlag München 2015, Ergänzung zur Literatur (kapitelweise).

- Koonin EV, Senkevich TG, Dolja VV.: Compelling reasons why viruses are relevant for the origin of cells. *Nat Rev Micro* 2009; 7:615
- Dolja VV and Koonin EV.: Common origins and host-dependent diversity of plant and animal viromes *Curr.Opin Virol* 2011; 5:322
- Villarreal LP.: *Viruses and the Evolution of Life.* 2005 ASM Press Washington DC
- Moelling K and Broecker F.: The Reverse Transcriptase-RNase H - from viruses to antiviral defense. *Annals of the New York Acad. Sci* (in press)
- Monster im Reagensglas:** Eigen M.: *From Strange Simplicity to Complex Familiarity.* Oxford University Press 2013.
- Spiegelman S et al. The Synthesis of a Self-Propagating and Infectious Nucleic Acid with a Purified Enzyme. *PNAS* 1965; 54:919
- Oehlschläger F, Eigen M.: 30 Years Later – a New Approach to Sol Spiegelman's and Leslie Orgel's in vitro evolutionary studies. *Origins of Life and Evolution of Biospheres* 1997;2:437
- Kacian DL et al. Spiegelman S.: A Replicating RNA Molecule Suitable for a Detailed Analysis of Extracellular Evolution and Replication. *PNAS* 1972; 69:3038
- Glück gehabt bisher:** link to NASA Ende der Welt:
<http://www.sesync.org/sites/default/files/resources/motesharrei-rivas-kalnay.pdf>
- Cano RJ, Borucki MK.: Revival and identification of bacterial spores in 25- to 40-million-year-old Dominican amber. *Science* 1995; 268:1060
- Wunder:** Rassoulzadegan M, et al Cuzin F.: RNA-mediated non-mendelian inheritance of an epigenetic change in the mouse. *Nature.* 2006; 441:469
- Cuzin F, Rassoulzadegan M.: Non-Mendelian epigenetic heredity: gametic RNAs as epigenetic regulators and transgenerational signals. *Essays Biochem.* 2010 Sep 20;48(1):101-6.
- Seth M, Shirayama M et al Mello CC.: The C. elegans CSR-1 argonaute pathway counteracts epigenetic silencing to promote germline gene expression. *Dev Cell.* 2013 Dec 23;27(6):656-63.
- Simon M, Sakaguchi A, Miska EA, Ahmed S.: Reduced insulin/IGF-1 signaling restores germ cell immortality to caenorhabditis elegans Piwi mutants. *Cell Rep.* 2014; 7:762
- Weick EM, **Miska EA.**: piRNAs: from biogenesis to function. *Development.* 2014; 141:3458
- Sarkies P, **Miska EA.**: Small RNAs break out: the molecular cell biology of mobile small RNAs. *Nat Rev Mol Cell Biol.* 2014; 15:525
- Shirayama M et al **Mello CC.**: piRNAs initiate an epigenetic memory of nonself RNA in the C. elegans germline. *Cell.* 2012;150:65-77.
- Hanson HM et al **Ashe MC.**: Characterizing Social and Recreational Programming in Assisted Living. *Can J Aging.* 2014; 11:1
- Ashe A et al. Miska EA.: pi RNA can trigger a multigenerational epigenetic memory in the germline of c.elegans *Cell* 2012; 150: 88
- Kohl JV.: Nutrient-dependent/pheromone controlled adaptive evolution: a model, *Socioaffective Neuroscience and Psychology* 2013; 3:20553
- Trevino AE and Zhang F.: Genome editing using Cas9 nickase *Methods in Enzymology* 2014; 546:161
- Pembrey M Saffery R. Bygren LO, Network in Epigenetic Epidemiology: Human transgenerational responses to early-life experience: potential impact on development, health and biomedical research. *J med Genet* 2014; 51:563
- Pembrey, Bygren and ALSPAC Study: Sex-specific male-line transgenerational responses in humans *Eur J Hum Genet* 2006, 02:149,

Abkürzungen:

CSHS: Cold Spring Harbor Symposium
ARHR: Aids Research and Human Retroviruses
PNAS: Proceedings of the National Academy of Sciences
ASM: American Society of Microbiology
ANYASAnnals New york Academy of Science

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