

Table. Prevalence Studies on XMRV and MLV-related Virus Infection in Human Diseases and General Populations

*	Study	Population	Samples	Findings/Results	Assays/Methods
Prostate Studies					
X	Urisman A, et al. Identification of a Novel Gammaretrovirus in Prostate Tumors of Patients Homozygous for R462Q RNASEL Variant. PLOS. 2006; 2(3).	Prostate cancer patients US	86 PCA tissue samples	8/20 (40%) RNASEL R462Q-homozygous cases 0/14 heterozygous 1/52 (1.9%) homozygous wild-type (familial PCA)	Nested RT-PCR
X	Fischer N, et al. Prevalence of human gammaretrovirus XMRV in sporadic prostate cancer. J Clin Virol. 2008; 43:227-283.	PCA patients Germany	105 PCA tissue samples (87 pts) 70 tissue controls	1/105 (0.95%) positive (non-familial PCA) 1/70 (1.42%) positive (healthy prostate tissue)	RNA Nested RT-PCR
	Hohn O, et al. Lack of evidence for xenotropic murine leukemia virus-related virus (XMRV) in German prostate cancer patients. Retrovirol. 2009; 6(92).	PCA patients Germany	589 PCA tissue samples 146 PCA serum samples	All negative: 0/589 DNA positive 0/146 Ab positive	DNA/RNA gag Nested RT-PCR ELISA

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	D'Arcy F, Foley R, Perry A, Marignol L, Lawler M, Gaffney E, Watson R, Fitzpatrick J, Lynch T: No evidence of XMRV in Irish prostate cancer patients with the R462Q mutation. <i>European Urology supplements</i> 2008, 7.	PCA patients Ireland	139 PBMC DNA Tissue from 7 patients homozygous for R462Q	All negative 0/139	PCR
X	Schlaberg R, et al. XMRV is present in malignant prostatic epithelium and is associated with prostate cancer, especially high-grade tumors. PNAS. 2009; 106 (38): 16351-16356.	PCA patients US	233 PCA tissue samples 101 tissue controls	14/233 (6.2%) PCR 54/233 (23%) IHC stain 2/101 (2%) PCR 4/101 (4%) IHC stain	Tissue, DNA Quantitative PCR XMRV-specific stain IHC
X	Switzer et al CDC Paper #149, Abstract 17th CROI meeting, 2010 http://www.retroconference.org/2010/Abstracts/37160.htm	PCA patients US	162 PCA tissue samples 120 matched PCA plasma samples	2 /162 (1.2%) tissues positive by PCR 0/162 plasma pos PCR 0/162 plasma pos WB All PCR negative tissues were neg (plasma) by PCR and WB	Tissue, plasma Nested PCR Western Blot
	Arnold RS, et al: XMRV infection in	PCA patients		11/40 (27.5%) sera positive for	Serological assay

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X	patients with prostate cancer: novel serologic assay and correlation with PCR and FISH. <i>Urology</i> , 75:755-761.	US	40 PCA plasma samples	neutralizing anti-XMRV antibodies. 8/20 (40%) RNASEL QQ 3/20 (15%) RNASEL RQ or RR Consistent with PCR and FISH results	(Neutralizing antibodies)
X	Das Gupta J, et al. Presence of XMRV RNA in urine of prostate cancer patients. Abstract. International Workshop XMRV. 2010. <i>Reviews in Antiviral Therapy</i> , Volume 8, 2010.	PCA pts. US	120 urine PCA 22 urine controls	31/120 (26%) pos env RNA by qRT-PCR 10/120 pos nRT-PCR 1/22 (4.5%) control pos qRT-PCR	Viral RNA isolation (Ambion) qRT-PCR (env RNA) nested RT-PCR (env)
X	Ikeda Y, et al. Prevalence of XMRV in prostate cancer patients at Mayo clinic. Abstract. International Workshop XMRV. 2010. <i>Reviews in Antiviral Therapy</i> , Volume 8, 2010.	PCA pts. New York	DNA:40 normal/benign; 70 intermediate; 40 high grade Plasma: 159 PCA pts; 201 matched controls	1/40 nested PCR Pos 5/70 nested PCR Pos 2/40 nested PCR Pos 1/40 RT PCR Pos 4/70 RT PCR Pos 1/40 RT PCR Pos All plasma negative by IFA	Gag RT & nested PCR Indirect IFA, virus neutralization assays, western blot
				16/ 258 (6.2%) XMRV-specific	XMRV NAb

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X	Makarova N, et al. Prevalence of neutralizing antibodies against XMRV in clinical prostate cancer. Abstract. International Worskshop XMRV. 2010. Reviews in Antiviral Therapy, Volume 8, 2010.	PCA pts. Atlanta	258 PCA sera smaples	NAb positive	
	Aloia AL, Sfanos KS, et al. Failure to detect XMRV in prostate prostatic tissues. Cancer Research. 2010. eprint.	PCA pts. North America	161 tumor derived samples (PCR) 596 tumor tissue samples (IHC) 452 benign prostatic tissue samples (IHC)	All negative 0/161 tumor (PCR) 0/596 tumor (IHC) 0/452 benign (IHC)	RT PCR & IHC (MLV30, MLV70) assays
X	Fischer N, et al. XMRV prevlaence in prostate cancer tissue and the role of the prostate compartment in XMRV. Abstract. International Worskshop XMRV. 2010. Reviews in Antiviral Therapy, Volume 8, 2010.	PCA pts. Northern Europe	355 tissue samples PCA pts 40 PBMCs PCA pts 70 controls	2/355 tissue PCA (heterozygous for R462Q mutation) 0/40 PMBC PCA 0/70 (?)	RT PCR

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X	Danielson BP, Ayala GE, Kimata JT. XMRV infection of prostate cancer patients from the Southern United States and analysis of possible correlates of infection. J Infect Dis. 2010; 202; 1470-1476.	PCA patients Southern US	144 PCA prostatic tissue samples (55 normal tissue)	32/144 (22%) tissue PCA	RT PCR Nested PCR env
CFS Studies					
X	Lombardi VC, et al. Detection of an Infectious Retrovirus, XMRV, in Blood Cells of Patients with Chronic Fatigue Syndrome. Science express. Oct 2009.	CFS patients US	101 CFS pts 218 controls	68/101 (67%) positive 8/218 (3.7%) positive OR = 54.1(95%CI: 23.8-122)	PBMCs, DNA Gag Nested PCR WPI Lab
	Erlwein O, et al. Failure to Detect the Novel Retrovirus XMRV in Chronic Fatigue Syndrome. PLoS ONE. Jan 2010; 5(1).	CFS patients UK	186 CFS samples	All negative	DNA for XMRV and MLV. Nested PCR. Assay controls used.

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	<p>Groom HC, et al. Absence of xenotropic murine leukaemia virus-related virus in UK patients with chronic fatigue syndrome. <i>Retrovirology</i>. 2010; 7(10).</p>	<p>CFS patients UK</p>	<p>170 CFS pts 395 controls</p>	<p>CFS: All negative by PCR 1/28 (3.6%) CFS serum showed XMRV neutralizing activity. Controls: All negative by PCR. 25/395 (6.3%) positive for neutralizing assay. Strong cross reactive with VSV.</p>	<p>PBMCs. XMRV DNA. PCR (not nested) or real time PCR (gag and env) Viral neutralization assay for XMRV and MLV.</p>
	<p>Van Kuppeveld FJM, et al. Prevalence of xenotropic murine leukaemia virus-related virus in patients with chronic fatigue syndrome in the Netherlands: retrospective analysis of samples from an established cohort. <i>BMJ</i>. 2010; 340: c1018.</p>	<p>CFS patients Netherlands</p>	<p>32 CFS pts. 43 controls A matched case-control study</p>	<p>All negative</p>	<p>PBMCs. DNA. Nested PCR of gag gene. Real time PCR of integrase gene</p>

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	Switzer W, Jia H, Hohn O, Zheng H, Tang S, Shankar A, Bannert N, Simmons G, Hendry M, Falkenberg VR, Reeves WC, Heneine W. Absence of evidence of xenotropic murine leukemia virus-related virus infection in persons with chronic fatigue syndrome and healthy controls in the United States. <i>Retrovirology</i> . 2010. http://www.retrovirology.com/content/7/1/57	CFS, blood donors and general population US	51 CFS cases 53 healthy controls 41 U.S. blood donors	All negative	Nested PCR, WB, ELISA, IFA Tested in three labs CDC study
	Hong P, Li J, Li Y. Failure to detect xenotropic murine leukaemia virus-related virus in Chinese patients with chronic fatigue syndrome. <i>Virology Journal</i> . 2010; 7:224.	CFS patients China	65 CFS patients 85 blood donors (65 healthy; 20 with HBV, HCV, HIV and/or HTLV)	All negative 0/65 CFS 0/65 healthy blood donors	RT PCR PBMCs and plasma
X	Cheny P. XMRV detection in a national practice specializing in chronic fatigue syndrome. Abstract. International Workshop XMRV. 2010. <i>Reviews in Antiviral Therapy</i> , Volume 8, 2010.	Severe CFS pts US	47 plasma/PBMC samples	74.5% positive 50% XMRV in non-CFS family members (these samples are not further described)	Performed by VIP Dx labs: PCR of plasma, PBMC and isolation of XMRV to LNCap

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X	Strayer D, Mitcovits J, Carter W. Comparison of demographic parameters and health/performance status of XMRV antibody positive vs. Negative CFS subjects in a phase III clinical trial. Abstract. International Workshop XMRV. 2010.	CFS pts	208 severely debilitated CFS pt sera	70/208 (33.7%) Ab pos	Ab Serology
X	Hanson MR, et al. XMRV in Chronic Fatigue Syndrome: A Pilot Study. Abstract. International Workshop XMRV. 2010. Reviews in Antiviral Therapy, Volume 8, 2010.	CFS patients New York	30 PBMCs (10- severe CFS; 10 recovered CFS; 10 controls)	8/10 severe 3/10 recovered 1/10 controls	Nested PCR
X	Lo SC, et al. Detection of MLV-related virus gene sequences in blood of patients with chronic fatigue syndrome and healthy blood donors. PNAS. 2010.	CFS patients US	37 PMBC, CFS pts 44 controls (blood donors)	MLV positivity: 32/37 (86.5%) PMBC CFS 3/44 (6.8%) PMBC controls	Gag Nested PCR MLV

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X	<p>Mikovits J, et al. Detection of infectious XMRV in the peripheral blood of chronic fatigue syndrome patients in the United Kingdom. Abstract. International Workshop XMRV. 2010. Reviews in Antiviral Therapy, Volume 8, 2010.</p>	<p>CFS pts UK</p>	<p>50 CFS PMBC and plasma</p>	<p>>60% positive Detected in both PBMCs and plasma</p>	<p>Nested PCR, virus isolation, & Antibody testing</p>
	<p>Hohn O, et al. No evidence for XMRV in CFS and MS patients in Germany despite the ability of the virus to infect human blood cells in vitro. Abstract. International Workshop XMRV. 2010. Reviews in Antiviral Therapy, Volume 8, 2010.</p>	<p>CFS and MS pts Germany</p>	<p>36 CFS (EIA); 17 controls (EIA); 50 MS with fatigue (EIA) 39 CFS PBMCs; 50 MS PBMCs; 30 control PBMCs</p>	<p>All negative</p>	<p>Gag & env ELISAs Nested PCR</p>
	<p>Blomberg J. Search of XMRV in Swedish patients with myalgic encephalitis/chronic fatigue syndrome (ME/CFS) and prostate cancer; methods and results. Abstract. International Workshop XMRV. 2010. Reviews in Antiviral Therapy, Volume 8, 2010.</p>	<p>CFS pts Sweden</p>	<p>40 CFS plasma 50 CFS PBMCs 400 PCA tissue samples 200 controls</p>	<p>All negative</p>	<p>RT qPCR Gag & env PCR for RNA & DNA, serology</p>

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	<p>Henrich TJ, et al. Xenotropic Murine Leukemia Virus-Related Virus Prevalence in Patients with Chronic Fatigue Syndrome or Chronic Immunomodulatory Conditions. J Infect Dis. 2010; 202; 1478-1481.</p>	<p>Outpatients with various illnesses. Boston, MA</p>	<p>32 CFS PBMCs 43 HIV positive cryopreserved PBMCs 97 RA cryopreserved PBMCs 26 transplant recipients cryopreserved PBMCs 95 general patients cryopreserved PBMCs</p>	<p>All negative</p>	<p>PBMC DNA PCR (Qiagen)</p>
Other Diseases/Populations					
X	<p>Fischer N, Schulz C, Stieler K, Hohn O, Lange C, Drosten C, Aepfelbacher M. Xenotropic murine leukemia virus-related gammaretrovirus in respiratory tract. Emerg Infect Dis. 2010; DOI: 10.3201/eid1606.100066</p>	<p>Patients with respiratory tract infections/disease Germany</p>	<p>75 RTI swab/sputum samples 31 RTI/COPD BAL samples 161 RTI/immunosuppressed BAL/TS samples 62 controls, BAL throat</p>	<p>3/75 (2.3%) in travelers from Asia who had RTIs 1/31 (3.2%) in patients with COPD 16/161 (9.9%) in immunosuppressed patients with severe RTIs 2/62 (3.2%) in the healthy</p>	<p>Gag Nested PCR</p>

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			swab samples	control group	
X	Pfof MA, Hagen KS, Ruscetti FW, Mikovits JA. Detection of infectious XMRV in the peripheral blood of children. Abstract. International Workshop XMRV. 2010. Reviews in Antiviral Therapy, Volume 8, 2010.	Children with neuroimmune disorders US	66 (29 children/37 parents)	55% pos: 17/29 children (14/17 autistic children) 20/37 parents	Performed at WPI: Ab serology, PCR, RT PCR and XMRV isolation.
	Kunstman et al. Absence of xenotropic murine leukemia virus-related virus in blood cells of men at risk for and infected with HIV. AIDS 2010, Vol 24 No 11, p1784-1785.	HIV positive men US	996 men from the Chicago Multicenter AIDS Cohort Study 562 HIV+ ; 434 at risk, HIV-	All negative	qPCR for <i>gag</i> sequences
	Tang S, et al. Absence of detectable XMRV in plasma or PBMC of human immunodeficiency virus type one (HIV-1) infected individuals in Cameroon and Uganda. Abstract.	HIV-1 pos pts. Cameroon/Uganda	69 plasma HIV pos 19 PBMC HIV pos	All negative	Viral RNA & genomic DNA extraction using QIAmp MiniElute Virus Spin kit. RT-

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	International Workshop XMRV. 2010. Reviews in Antiviral Therapy, Volume 8, 2010.		94 plasma controls		PCR, DNA PCR, qPCR (gag, env, pol)
	Cornelissen M, et al. Lack of Detection of XMRV in seminal plasma for HIV-1 infected men in the Netherlands. PLOS ONE. 2010: 5(8).	HIV pos pts Netherlands	93 seminal plasma samples from 54 HIV-1 infected men	All negative	Gag nested PCR
	Jeziorski E, et al. No evidence for XMRV association in pediatric idiopathic diseases in France. Retrovirology. 2010; 7:63.	Pediatric idiopathic infectious diseases, respiratory diseases and adults with spondyloarthritis (SpA) France	72 DNA samples from 62 children 80 DNA nasopharyngeal samples from children 19 SpA adult samples	All negative	Env nested PCR for XMRV and MLV
	Barnes E., et al. Failure to Detect Xenotropic Murine Leukemia Virus-Related Virus in Blood of Individuals at High Risk of Blood Borne Viral	HIV-1 patients (acute and chronic)	133 HIV chronic samples	All negative	Gag and env DNA (HIV chronic and HCV) Gag and env RNA

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	Infections. J Infect Dis. 2010;202; 1482-1485.	and HCV pts. English/Swiss pts.	101 HIV acute samples 67 HCV chronic samples		(acute) ELISPOT PBMCs (HIV acute and HCV)
Blood Donors					
X	Japanese Study; Furuta et al, Cold Spring Harbor symposium, 2009	Blood donors Japan	Japan- blood donors	1-3% Ab pos in blood donors	Serum, Western blot
X	Qui et al. XMRV: Examination of Viral Kinetics, Tissue Tropism, and Serological Markers of Infection. Paper #151, Abstract 17th CROI 2010. http://www.retroconference.org/2010/Abstracts/39393.htm	Blood donors US	2851 US blood donors	3/2851 blood donor plasma specimens were positive for XMRV (0.1%) US blood donors	Architect platform EIA, p15E, p30 and gp 70.
	Gao et el. (Gen-Probe and ARC) 2010 International Conference on Emerging Infectious Diseases; July 13, 2010, Atlanta GA	Blood donors US	1435 plasma US blood donors 44 HIV-1 pos	All negative	rtTMA; DNA and RNA; research assay TIGRIS system

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