

TABLE 1. Candidate HIV-1 Vaccines Evaluated in Uninfected Adults

Vaccine Antigen (HIV Strain)	Production Method	Adjuvant or Vehicle	Vaccine Developer	Site of Study or AVEG/HVTN** Protocol number(s)	Reference for Clinical Trial
PHASE I STUDIES					
ENVELOPE PROTEINS					
rgp160 (LAI)	Baculovirus/insect cells	Aluminum Phosphate	MicroGeneSys	National Institutes of Health, Bethesda, MD	91
rgp160 (LAI)	Baculovirus/insect cells	Aluminum Phosphate	MicroGeneSys	003, 003A, 003B	64,92
rgp160 (IIIB)	Vaccinia/vero cells	AL(OH) ₃ + Deoxycholate	IMMUNO-AG	004, 004A, 004B	68,69
Env 2-3 (SF-2)	Yeast	MF59 + MTP-PE	Chiron/Biocine	005A, 005B, 005C; Geneva, Switzerland	65,93
rgp120 (IIIB) rgp120 (MN)	CHO cells	AL(OH) ₃	Genentech	006	94
rgp120 (SF-2)	CHO cells	MF59	Chiron/Biocine	Univ. California-San Francisco	95
rgp120 (SF-2)	CHO cells	MF59 + MTP-PE	Chiron/Biocine	007A, 007B, 007C	66
rgp120 (MN) rgp120 (IIIB)	CHO cells	AL(OH) ₃	Genentech	009	67
rgp160 (MN)	Vaccinia/vero cells	AL(OH) ₃ + Deoxycholate	IMMUNO-AG	013A	96
rgp160 (MN) rgp120 (MN)	Vaccinia/vero cells CHO cells	AL(OH) ₃ + Deoxycholate AL(OH) ₃	IMMUNO-AG Genentech	013B	97
rgp160 (MN/LAI) V3 loop of gp120 (MN)	Vaccinia/BHK-21 cells Synthetic linear peptide	AL(OH) ₃ Mineral oil + mannose mono-oleate (IFA)	Pasteur-Merieux Connaught	Paris, France	98
rgp120 (SF-2)	CHO cells	Multiple Adjuvants	Chiron/Biocine	015	Manuscript in preparation [†]
rgp120 (MN)	CHO cells	QS-21 and/or AL(OH) ₃	Genentech (VaxGen)	016, 016A, 016B, 036	Manuscript in preparation
rgp120 (SF-2)	CHO cells	MF59	Chiron/Biocine	024	control for AVEG 022a
rgp120 (MN/A244) (Clades B & E)	CHO cells	QS-21 and/or AL(OH) ₃	VaxGen	036	in progress
rgp120 (SF-2)	CHO cells	MF59	Chiron/Biocine	WRAIR [†] /Thailand	99
rgp120 (W61D) (1° R5X4, Clade B)	CHO cells	3D-MPL + QS21 in oil-in-water emulsion (SBAS) AL(OH) ₃	Smith-Kline Beecham Biologics	UK	100
NONENVELOPE PROTEINS					
Ty p17/p24 VLP (LAI)	Yeast transposon	None	British Biotech PLC	UK	88
Ty p17/p24 VLP (LAI)	Yeast transposon	None or AL(OH) ₃	British Biotech PLC	019	Manuscript in preparation
p24 gag	CHO cells	MF59	Chiron	University of Nebraska	NA

Vaccine Antigen (HIV Strain)	Production Method	Adjuvant or Vehicle	Vaccine Developer	Site of Study or AVEG/HVTN** Protocol number(s)*	Reference for Clinical Trial
Tat (LAI)	E. coli	NA	B. Ensoli	Italy	in progress
PEPTIDES					
Gag lipopeptide P3C541b	Synthetic linear peptide	lipid conjugate	United Biomedical, Inc.	021	Manuscript in preparation
HGP-30 (LAI p17)	Synthetic linear peptide	KLH	Viral Technologies	George Washington University Medical Center, Washington, DC	101-103
V3 loop of gp120 (MN)	Synthetic octameric peptide	AL(OH) ₃	United Biomedical, Inc.	011; Yunnan, China; St. Vincent's Hospital, Sydney, Australia; Bangkok, Thailand	104-107
V3 loop of gp120 (MN)	Synthetic linear peptide	PPD	A. Rubinstein	Albert Einstein College of Medicine	108
V3 loop of gp120 (15 strains)	Synthetic octameric peptide	AL(OH) ₃	United Biomedical, Inc.	017	109
V3 loop of gp120 (MN)	Synthetic octameric peptide + encapsulation	AL(OH) ₃	United Biomedical, Inc.	018	Manuscript in preparation
V3 loop of gp120 (MN)	Synthetic octameric peptide + encapsulation	AL(OH) ₃	United Biomedical, Inc.	023	Manuscript in preparation
HIV-1 gp120 C4-V3 peptides (MN, EV91, RF, CANO)	Hybrid polyvalent synthetic peptides	Mineral oil + mannose mono-oleate (IFA)	Wyeth-Lederle Vaccines with Barton Haynes, Duke University	020	Manuscript in preparation
Epitopes from nef, gag (LAI), and V3 from envelope of BX08	mixture of synthetic linear peptides	lipid conjugate in micelles	BACHEM Feinchemikalien, Bubendorf, Switzerland and Sterilyo, Saint-Amand-les-Eaux, France	France	89
DNA VACCINES					
env/rev (APL 400-003)	GeneVax [□] DNA plasmid backbone	Bupivacaine ("facilitator")	Apollon	National Institutes of Health, Bethesda, MD	in progress
gag/pol (APL 400-047) (HXB2) Canarypox-HIV gp120, TM gp41, gag, protease, (MN/LAI) (vCP205) or Canarypox-HIV gp120, TM gp41, gag, protease, nef, pol (MN/LAI) (vCP1452)	GeneVax [□] DNA plasmid backbone Recombinant canarypox	Bupivacaine ("facilitator")	Apollon Aventis Pasteur	031 031 amendment	in progress in progress
env/rev (APL 400-003)	GeneVax [□] DNA plasmid backbone	Bupivacaine ("facilitator")	Apollon	University of Pennsylvania & Hahnemann MCP University	110
gag	plasmid		Merck Research Laboratories	Multiple sites in U.S.	in progress
Multiple HIV-1 epitopes (HIVA)	pThr plasmid vector		Medical Research Council, Andrew McMichael, Oxford, UK	UK, Kenya	in progress, 111
gp160 (MN) Canarypox-HIV gp120, TM gp41, gag, protease (MN/LAI) (vCP205)	GeneVax [□] DNA plasmid backbone Recombinant canarypox	Bupivacaine ("facilitator")	Apollon Aventis-Pasteur	WRAIR	in progress

Vaccine Antigen (HIV Strain)	Production Method	Adjuvant or Vehicle	Vaccine Developer	Site of Study or AVEG/HVTN** Protocol number(s)*	Reference for Clinical Trial
POX VIRUS RECOMBINANTS/COMBINATIONS					
Vaccinia-gp160 [HIVAC-1e] (LAI)	Recombinant vaccinia		Bristol-Myers Squibb/Oncogen	Zaire	112
Vaccinia-gp160 [HIVAC-1e] (LAI) rgp160 (LAI)	Recombinant vaccinia Baculovirus/insect cells		Bristol-Myers Squibb/Oncogen MicroGeneSys	Univ. of Washington-Seattle	73,113
Vaccinia-gp160 [HIVAC-1e] (LAI) rgp160 (LAI)	Recombinant vaccinia Baculovirus/insect cells	AL(OH) ₃	Bristol-Myers Squibb/Oncogen MicroGeneSys	002, 002A, 002B	59,72,74
Vaccinia-gp160 [HIVAC-1e] (LAI) rgp120 (SF-2) or Env 2-3 (SF-2)	Recombinant vaccinia CHO cells or yeast	MF59	Bristol-Myers Squibb/Oncogen Chiron/Biocene	008	Manuscript in preparation
Vaccinia-gp160 [HIVAC-1e] (LAI) rgp120 (SF-2) or rgp120 (LAI) or rgp120 (MN) or rgp160 (MN)	Recombinant vaccinia CHO cells Vaccinia/vero cells	MF59 AL(OH) ₃ AL(OH) ₃ + Deoxycholate	Bristol-Myers Squibb/Oncogen Chiron/Biocene Genentech IMMUNO-AG	010	70
Canarypox-gp160 (MN) (vCP125) rgp160 (MN/LAI)	Recombinant canarypox	PCPP	Pasteur-Merieux Connaught	Hopital de l'Institut Pasteur, Paris, France	114,115
Canarypox-gp160 (MN) (vCP125) rgp120 (SF-2)	Recombinant canarypox CHO cells	MF59	Pasteur-Merieux Connaught Chiron/Biocine)	012A, 012B	76
Vaccinia-HIV Env/gag/pol (TBC-3B)	Recombinant vaccinia		Therion Biologics	014A	in progress
Vaccinia-HIV Env/gag/pol (TBC-3B) rgp120 (MN)	Recombinant vaccinia CHO cells	AL(OH) ₃	Therion Biologics VaxGen	014C	in progress
Canarypox-HIV gp120, TM gp41, gag, protease (MN/LAI) (vCP205) rgp120 (SF-2)	Recombinant canarypox CHO cells	MF-59	Pasteur-Merieux Connaught Chiron/Biocine	022, 022A	Manuscript in preparation
Canarypox-HIV gp120, TM gp41, gag, protease, CTL epitopes in pol and nef (MN/LAI) (vCP300) rgp120 (SF-2)	Recombinant canarypox CHO cells	MF59	Pasteur-Merieux Connaught Chiron/Biocine	026	77
Canarypox-HIV gp120, TM gp41, gag, protease (MN/LAI) (vCP205) [□] rgp120 (MN)	Recombinant canarypox CHO cells	AL(OH) ₃	Pasteur-Merieux Connaught VaxGen	027	in progress
Canarypox-HIV gp120, TM gp41, gag, protease (MN/LAI) (vCP205) rgp120 (SF-2)	Recombinant canarypox CHO cells	MF59	Pasteur-Merieux Connaught Chiron/Biocine	029	116
Canarypox-HIV gp120, TM gp41, gag, protease (MN/LAI) (vCP205) APL 400-047 HIV-1 core structural proteins (HXB2 - gag/pol)	Recombinant canarypox GeneVax [□] DNA plasmid backbone	GM-CSF Bupivacaine ("facilitator")	Pasteur-Merieux Connaught Immunex Apollon	033 033 amendment	in progress in progress
Canarypox-HIV gp120, TM gp41, gag, protease (MN/LAI) (vCP205) p24	Recombinant canarypox CHO cells	MF59	Aventis-Pasteur Chiron	032	manuscript in preparation

Vaccine Antigen (HIV Strain)	Production Method	Adjuvant or Vehicle	Vaccine Developer	Site of Study or AVEG/HVTN** Protocol number(s)*	Reference for Clinical Trial
Canarypox-HIV gp120, TM gp41, gag, protease, (MN/LAI) (vCP205) Canarypox-HIV gp120, TM gp41, gag, protease, nef, pol (MN/LAI) (vCP1452) Canarypox-HIV gp120, TM gp41, gag, protease, nef, pol (MN/LAI) (vCP1433)	Recombinant canarypox		Aventis Pasteur	034	in progress
Canarypox-HIV gp120, TM gp41, gag, protease (MN/LAI) (vCP205) p24/V3 peptide	Recombinant canarypox synthetic peptide		Aventis-Pasteur	France	117
Canarypox-HIV gp120, TM gp41, gag, protease, (MN/LAI) (vCP205) (o)gp140	Recombinant canarypox vaccine/vero cells	PCPP or AL(OH) ₃	Aventis Pasteur	WRAIR	manuscript in preparation
Canarypox-HIV gp120, TM gp41, gag, protease, (MN/LAI) (vCP205)	Recombinant canarypox		Aventis Pasteur	Case Western Reserve University/Uganda	in progress
Canarypox-HIV gp120 (92TH023), TM gp41(LAI), gag/protease (LAI) vCP1521 (Clade E) (o)gp140 (92TH023/LAI) or rgp120 (SF-2/CM235)	Recombinant canarypox vaccinia-infected Vero cells CHO cells	PCPP MF59	Aventis-Pasteur Aventis Pasteur Chiron	WRAIR/Thailand	in progress
Canarypox-HIV gp120 (92TH023), TM gp41(LAI), gag/protease (LAI) vCP1521 (Clade E) rgp120 (MN/CM240)	Recombinant canarypox CHO cells	Alum	Aventis-Pasteur VaxGen	WRAIR/Thailand	in progress
Modified Vaccinia Ankara (MVA) with HIV-A polyepitope insert	Recombinant MVA		Andrew McMichael	UK	in progress
SALMONELLA TYPHI RECOMBINANT/COMBINATION					
<i>Salmonella typhi</i> CVD 908 - HIV-1 LAI rgp120 (VVG 203) rgp120 (MN)	Live attenuated recombinant <i>Salmonella typhi</i> CHO cells	AL(OH) ₃	University of Maryland Center for Vaccine Development VaxGen	028	in progress
PHASE II STUDIES					
ENVELOPE PROTEINS					
rgp120 (SF-2)	CHO cells	MF59	Chiron/Biocine	201	118
rgp120 (MN)	CHO cells	AL(OH) ₃	Genentech	201	118
rgp120 (SF-2/CM235) (1o clade E)	CHO cells	MF59	Chiron	WRAIR/Thailand	manuscript in preparation
POX VIRUS RECOMBINANTS/COMBINATIONS					

Vaccine Antigen (HIV Strain)	Production Method	Adjuvant or Vehicle	Vaccine Developer	Site of Study or AVEG/HVTN** Protocol number(s)*	Reference for Clinical Trial
Canarypox-HIV gp120, TM gp41, gag, protease (MN/LAI) (vCP205) rgp120 (SF-2)	Recombinant canarypox CHO cells	MF59	Pasteur-Merieux Connaught Chiron/Biocine	202	119
Canarypox-HIV gp120, TM gp41, gag, protease, nef, pol (MN/LAI) (vCP1452) rgp120 (MN and GNE8)	Recombinant canarypox CHO cells	AL(OH) ₃	Aventis Pasteur VaxGen	203	in progress
Canarypox-HIV gp120, TM gp41, gag, protease, nef, pol (MN/LAI) (vCP1452) rgp120 (MN)	Recombinant canarypox CHO cells	AL(OH) ₃	Aventis Pasteur VaxGen	HIVNET 026, Haiti, Trinidad, Brazil	in progress

PHASE III STUDIES

ENVELOPE PROTEINS

rgp120 (MN and GNE8) Clade B	CHO cells	AL(OH) ₃	VaxGen	Multi-Center VaxGen	Interim analysis 11/2001
rgp120 (MN and A244) Clades B & E	CHO cells	AL(OH) ₃	VaxGen	Thailand	Interim analysis 2002

NA = Not Available

* Multiple protocol numbers indicate that significantly different doses, schedules, or administration routes were evaluated. More details about AVEG/HVTN trial design can be found on the internet at <http://sharp.org>.

** AVEG = AIDS Vaccine Evaluation Group, HIVNET = HIV Network for Prevention Trials, now both incorporated into the HIV Vaccine Trials Network (HVTN)

H rgp120(SF-2) administered with one of seven adjuvants (AL(OH)₃, Monophosphoryl lipid A [MPL, Ribi ImmunoChem Research], liposome-encapsulated MPL with Alum [Walter Reed Army Institute of Research], MF59 [Chiron Vaccines], MF59 + MTP-PE [Chiron Vaccines], SAF/2 [Chiron Vaccines], SAF/2 with MDP [Chiron Vaccines]) to 15-16 volunteers. The rgp120 (SF-2) + MPL group was not offered an 18-month immunization.

& Alternate routes of administration: IM, oral, intranasal, intrarectal, intravaginal, IM+intranasal, IM+intrarectal

I Unpublished studies that have not been performed within the AVEG/HVTN system may not be listed.

☐ WRAIR = Walter Reed Army Institute of Research