



VeraCode™ and BeadXpress™ Equipment, Materials, and Reagents Checklist

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1. GoldenGate Genotyping, VeraCode/BeadXpress

1.1. Equipment, User-Supplied

- Safety glasses
- Protective gloves
- Lab coats
- Tube vortexer
- Microtiter plate centrifuge with g-force range of 8–3000 xg.
- Spectrofluorometer (optional)
Gemini XS or XPS (Molecular Devices)
- 8-channel precision pipettes (5 μ l to 200 μ l)
- Optional: twelve-channel precision pipette (5 μ l to 200 μ l)
- Stopwatch/timer
- Cap mat applicator, Corning PN 3081
- Vacuum flask assembly (flask, stopper, tubing, and vacuum source)
- Vacuum regulator, Qiagen catalog # 19530
- 96-well thermocycler with heated lid

A 96-well thermocycler can be purchased as part of:

Illumina Catalog # VC-120-1300, Optional GoldenGate Accessory Kit for BeadXpress (110V) and Illumina Catalog # VC-120-1301, Optional GoldenGate Accessory Kit for BeadXpress (220V)



1.2. Equipment, Illumina-Supplied

- Illumina Catalog # VC-101-1000, BeadXpress Reader System, 110V or Illumina Catalog # VC-101-1001, BeadXpress Reader System, 220V
 - BeadXpress Reader (110V or 220V)
 - Reagent carrier
 - Reagent and waste bottles
 - USB Cable, Type A-B, 1.0 Meter
 - Detachable AC Line Cord, 2.0.1
 - PC workstation with monitor
 - BeadXpress Reader System Manual
 - VeraCode Assay Guide
 - BeadXpress Reader System CD
 - BeadXpress Starter Kit (110V or 220V)

- Illumina Catalog # VC-120-1000, BeadXpress Starter Kit 110V or Illumina Catalog # VC-120 1001, BeadXpress Starter Kit 220V

The BeadXpress Starter Kit is included as a component of:
Illumina Catalog # VC-101-1000, BeadXpress Reader System, 110V or
Illumina Catalog # VC-101-1001, BeadXpress Reader System, 220V

 - VeraCode Bead Kitting System
 - VeraCode Vortex Incubator (110V or 220V)

- Illumina Catalog # VC-120-1200, GoldenGate Satellite Kit for BeadXpress (110V) or Illumina Catalog # VC-120-1201, GoldenGate Satellite Kit for BeadXpress (220V)
 - Microplate Shaker (110V or 220V)
 - High-Temperature Loop Fastener
 - Nylon Hook
 - Raised Bar Magnet
 - Heat Block w/ Microtubes Block
 - Digital Optical Stroboscope
 - Combi Heat Sealer (110V or 220V)
 - 96-Well Base Adapter



- Illumina Catalog # VC-120-1300, Optional GoldenGate Accessory Kit for BeadXpress (110V) or Illumina Catalog # VC-120-1301, Optional GoldenGate Accessory Kit for BeadXpress (220V)

NOTE: These components are not required if you already have them in your lab.

- 2 Refrigerated Benchtop Centrifuges (110V or 220V)
- 2 Microplate Carriers for M4 Rotor
- 2 Horizontal M4 Rotors
- Conical Inserts, 9x15 mL, 2 sets of 4
- 750 mL Buckets 2 sets of 4
- DNA Engine Thermocycler (110V or 220V)
- Alpha Unit Module, 96V-Well

1.3. Materials and Reagents, User-Supplied

You will need to purchase the following materials and reagents from a third-party vendor in order to perform VeraCode GoldenGate Genotyping assays on the BeadXpress Reader System.

1.3.1. Materials

- 96-well, black, flat-bottom Fluotrac 200 plates
Greiner, catalog # 655076
- Centrifuge tubes (50 ml and 15 ml)
Corning catalog # 430828 and #430055
- Aluminum foil
- Sterile plastic container
100 ml capacity, minimum
- 96-well 0.2 ml skirted microplates
Microseal 96-well skirted polypropylene microplates, 8x12 well array, MJ Research,
catalog # MSP-9601, or Thermo-Fast 96 skirted microplates, ABgene catalog # AB-0800
- 96-well 0.8 ml deep-well V-bottom plate
ABgene, catalog # AB-0859
- Serological pipettes (10, 25, and 50 ml)
- Aerosol filter pipette tips (5 µl to 200 µl)
- Heat Sealing Foil Sheets
Thermo-Seal, ABgene catalog # AB-0559
- Foil Stripper (optional)
ABgene catalog # AB-0592



- Microplate clear adhesive film
2mil Sealplate Adhesive Film, Nonsterile, Phenix Research Products, catalog # LMT-SEAL-EX
- Absorbent pads
- Cap Mats
Mat Caps for Deep Well Plates, polypropylene, pierceable, ABgene catalog # AB-0566
- Non-Sterile Solution Basins, 55 ml
Labcor Products, Inc., catalog # 730-001 or VWR, catalog # 21007-970
- Microseal "A" Film
PCR plate sealing film, MJ Research, catalog # MSA-5001
- Filter plates
MultiScreen Filter Plates, 0.45 μ M, clear, Styrene, Millipore, catalog # MAHV-N45 10/50
- 96-well V-bottom plates
Corning Costar* Brand Polypropylene 96-Well, V-bottom Plates, Cap Mats not included, Fisher Scientific catalog # 07-200-695 (Corning # 3363)
- 96-well storage mats
VWR International, catalog # 29445-122

1.3.2. Reagents

- Quant-iT PicoGreen DNA quantitation reagent
Molecular Probes/Invitrogen, catalog # P7581
- 10 mM Tris-HCL pH 8.0, 1 mM EDTA
- Lambda DNA
Invitrogen, catalog # 25250-028
- 1X tris-EDTA
- 2-propanol
- Titanium Taq DNA Polymerase
Clontech catalog # 639220
- 0.1N NaOH
Sodium hydroxide, Sigma-Aldrich catalog # S0899
- Reagent alcohol
90% ethanol, 5% methanol, 5% isopropanol—do not substitute with alcohols containing water.
- Deionized H₂O
- 5% KOH
Potassium hydroxide
- 10% bleach
Plain, unscented household bleach



1.4. Materials and Reagents, Illumina-Supplied

This section includes Illumina-supplied materials you will need in order to perform VeraCode GoldenGate Genotyping assays on the BeadXpress Reader, including one of two VeraCode GoldenGate kits (96-plex or 384-plex), BeadXpress System Buffer, and VeraCode Test and Calibration kit.

- VC-201-0096, VeraCode 96-Plex GoldenGate Kit, 480 samples
 - BOX A VeraCode DNA Activation Kit
 - MS1--Reagent used to activate DNA
 - PS1--Precipitation solution
 - RS1--Resuspension solution
 - VC-QDNA barcode labels, quantity 5
 - VC-DNA barcode labels, quantity 5
 - VC-SUD barcode labels, quantity 5
 - VC-ASE barcode labels, quantity 5
 - VC-PCR barcode labels, quantity 5
 - VC-HYB barcode labels, quantity 5
 - VC-INT barcode labels, quantity 5
 - Filter Plate: VC_____ -PCR labels, quantity 5
 - Vortexer calibration Label, quantity 1
 - BOX B VeraCode GoldenGate Pre-PCR #1
 - OB1--Oligo hybridization & cDNA and gDNA binding buffer
 - MMP--Master mix for PCR reagent
 - IP1--Reagent used to elute extended and ligated products
 - UB1--Universal buffer used to wash paramagnetic beads
 - UDG--Uracil DNA Glycosylase, used to help prevent PCR product contamination
 - BOX C VeraCode GoldenGate Pre-PCR #2
 - MEL--Reagent used for extension & ligation
 - AM1--Reagent used to wash away non-specifically hybridized and excess oligos from the gDNA
 - BOX D VeraCode GoldenGate Post-PCR
 - MPB--Magnetic particle reagent used to bind double-stranded PCR products
 - MH2--Reagent used to make the HYB plate
 - UB2--Universal buffer used to wash magnetic particles and the SAM
 - VW1--Reagent used to wash the VeraCode beads
 - Filter plate adaptor, quantity 2



- BOX E 96-Plex VeraCode Bead Plates
96-Plex VeraCode Bead Plate, quantity 5
- OPA GoldenGate Assay oligo pool (custom oligo pool)
- VC-201-0384, VeraCode 384-Plex GoldenGate Kit, 480 samples
 - BOX A VeraCode DNA Activation Kit
 - MS1--Reagent used to activate DNA
 - PS1--Precipitation solution
 - RS1--Resuspension solution
 - VC-QDNA barcode labels, quantity 5
 - VC-DNA barcode labels, quantity 5
 - VC-SUD barcode labels, quantity 5
 - VC-ASE barcode labels, quantity 5
 - VC-PCR barcode labels, quantity 5
 - VC-HYB barcode labels, quantity 5
 - VC-INT barcode labels, quantity 5
 - Filter Plate: VC_____ -PCR labels, quantity 5
 - Vortexer calibration Label, quantity 1
 - BOX B VeraCode GoldenGate Pre-PCR #1
 - OB1--Oligo hybridization & cDNA and gDNA binding buffer
 - MMP--Master mix for PCR reagent
 - IP1--Reagent used to elute extended and ligated products
 - UB1--Universal buffer used to wash paramagnetic beads
 - UDG--Uracil DNA Glycosylase, used to help prevent PCR product contamination
 - BOX C VeraCode GoldenGate Pre-PCR #2
 - MEL--Reagent used for extension & ligation
 - AM1--Reagent used to wash away non-specifically hybridized and excess oligos from the gDNA
 - BOX D VeraCode GoldenGate Post-PCR
 - MPB--Magnetic particle reagent used to bind double-stranded PCR products
 - MH2--Reagent used to make the HYB plate
 - UB2--Universal buffer used to wash magnetic particles and the SAM
 - VW1--Reagent used to wash the VeraCode beads
 - Filter plate adaptor, quantity 2
 - BOX E 384-Plex VeraCode Bead Plates
 - 384-Plex VeraCode Bead Plate, quantity 5



- OPA GoldenGate Assay oligo pool (custom oligo pool)

The following materials are required for performing any assay on the BeadXpress Reader, including GoldenGate Genotyping Assays:

- VC-400-1001 BeadXpress System Buffer
VR1 Buffer, 10X--Reagent used in the BeadXpress Reader (500 mL)
- VC-321-1000 VeraCode Test and Calibration Kit
12 calibrations--Used to calibrate the BeadXpress Reader on a monthly basis.

2. Bead Kitting

Use the following materials to plate VeraCode Universal Beads or VeraCode Carboxyl Beads into a 96-well plate (or 96-well strip-well plate):

- VeraCode Universal Oligo Beads or Carboxyl Beads
(see the following sections for specific bead sets), and:

<input checked="" type="checkbox"/>	ITEM	SOURCE	CATALOG NUMBER
	VeraCode Bead Kitting System	Illumina (included with BeadXpress Reader System)	VC-501-1000
	Polypropylene strip wells or 96-well polypropylene plate	VWR or Corning	14230-404 or 3371
	Polypropylene cap mat	Corning	3080
	Easy-peel heat seals	ABgene	AB-0745
	Storage plate cap strips	ABgene	AB-0981
	EtOH 70%	N/A	N/A
	EtOH 30% in 1X PBS, pH 7.4	N/A	N/A
	Vacuum manifold (or house vacuum) capability	N/A	N/A



3. Universal Oligo Beads (Example Protocol)

The following sections include information about the equipment, materials, and reagents you will need in order to perform VeraCode Assays using Universal Oligo Bead Sets on the BeadXpress Reader.

3.1. Equipment, User-Supplied

- Tube vortexer
- Microtiter plate centrifuge with g-force range of 8–3000 xg.
- Spectrofluorometer (optional)
Gemini XS or XPS (Molecular Devices)
- 8-channel precision pipettes (10 μ l and 200 μ l)
Optional: single-channel precision pipettes (10 μ l and 200 μ l)
- Stopwatch/timer
- Cap mat applicator, Corning PN 3081
- Vacuum flask assembly (flask, stopper, tubing, and vacuum source)
- Vacuum regulator, Qiagen catalog # 19530
- 96-well thermocycler with heated lid

3.2. Equipment, Illumina-Supplied

- Illumina Catalog # VC-101-1000, BeadXpress Reader System, 110V or
Illumina Catalog # VC-101-1001, BeadXpress Reader System, 220V
 - BeadXpress Reader (110V or 220V)
 - Reagent carrier
 - Reagent and waste bottles
 - USB Cable, Type A-B, 1.0 Meter
 - Detachable AC Line Cord, 2.0.1
 - PC workstation with monitor
 - BeadXpress Reader System Manual
 - VeraCode Assay Guide
 - BeadXpress Reader System CD
 - BeadXpress Starter Kit (110V or 220V)
- Illumina Catalog # VC-120-1000, BeadXpress Starter Kit 110V or
Illumina Catalog # VC-120 1001, BeadXpress Starter Kit 220V

The BeadXpress Starter Kit is included as a component of:



Illumina Catalog # VC-101-1000, BeadXpress Reader System, 110V or
 Illumina Catalog # VC-101-1001, BeadXpress Reader System, 220V

- VeraCode Bead Kitting System
- VeraCode Vortex Incubator (110V or 220V)

3.3. Materials and Reagents, User-Supplied

This section describes materials and reagents that you must purchase from third-party vendors in order to perform VeraCode Assays using Universal Oligo Bead Sets on the BeadXpress Reader.

- Safety glasses
- Protective gloves
- Lab coats
- Primers for each SNP:
 PCR primers (forward and reverse) for each target DNA
 ASPE primers (wildtype and variant) for each SNP
- Assay reagents:

<input checked="" type="checkbox"/>	ITEM	SOURCE	CATALOG NUMBER
	Platinum Taq Polymerase	Invitrogen	10966-034
	dNTPs	Invitrogen	10297-018
	Biotin dCTP	Invitrogen	19518-018
	Streptavidin-Alexa 647	Invitrogen	S-32357
	20X SSC	Sigma	S6639
	Tween 20 (10% solution)	Sigma	P8942
	Shrimp Alkaline Phosphatase	USB	70092Y
	Exonuclease I	USB	70073Z

- Additional materials:

<input checked="" type="checkbox"/>	ITEM	SOURCE	CATALOG NUMBER
	PCR plates	Fisher Scientific	08-408-225
	Strip caps	ABgene	AB0602
	PCR quick tubes with caps	Phenix Research	MPC-425



3.4. Materials and Reagents, Illumina-Supplied

This section describes materials and reagents available from Illumina which are necessary in order to perform assays on the BeadXpress Reader using the VeraCode Universal Bead Sets.

Multiplexed assays can be performed by combining individual Universal Oligo Bead Sets, by using a pre-pooled Universal Oligo Bead Set, or by using a combination of the two in order to reach the desired level of multiplexing.

Illumina supplies 48 distinct VeraCode Universal Bead Sets (individual bead codes). Each set contains enough beads to process 6 x 96 samples. The following pages list all of the VeraCode Universal Bead Sets (individual bead codes) that are available from Illumina.

- Illumina Catalog # VC-301-XXXX, VeraCode Universal Bead Set, Code XXXX VeraCode Universal Bead -XXXX (6 tubes)

Illumina also supplies two VeraCode Universal Pooled Bead Sets (48-plex pooled bead codes):

- Illumina Catalog # VC-301-0481, VeraCode Universal Bead Set, Code 0481 VeraCode Universal Bead Pool (48-Plex) - 0481 (6 tubes)
- Illumina Catalog # VC-301-0482, VeraCode Universal Bead Set, Code 0482 VeraCode Universal Bead Pool (48-Plex) - 0482 (6 tubes)

The following pages list the bead components of both of the VeraCode Universal Bead Sets (pooled) that are available from Illumina.

The following materials are required for performing any assay on the BeadXpress Reader, including assays using VeraCode Universal Bead Sets:

- VC-400-1001 BeadXpress System Buffer
VR1 Buffer, 10X--Reagent used in the BeadXpress Reader (500 mL)
- VC-321-1000 VeraCode Test and Calibration Kit
12 calibrations--Used to calibrate the BeadXpress Reader on a monthly basis.



3.5. VeraCode Universal Bead Sets, Individual Bead Codes

REF	Description	VeraCode Bead Code	Probe Seq
VC-301-5440	VeraCode Universal Bead Set, Code 5440	5440	TTCGTAACCCGTGCGAAGTGCC
VC-301-5632	VeraCode Universal Bead Set, Code 5632	5632	ACGATGGTACGGTTCGCTGTGTA
VC-301-5634	VeraCode Universal Bead Set, Code 5634	5634	GGTTAGCGATCATAACCGGCACT
VC-301-5640	VeraCode Universal Bead Set, Code 5640	5640	CCCGGTTGTCAGTCCGAAAGGG
VC-301-5664	VeraCode Universal Bead Set, Code 5664	5664	ACCTGAGTTACCGGCGTTACGT
VC-301-5760	VeraCode Universal Bead Set, Code 5760	5760	GCTGGATTGTCCGCACTCAAGT
VC-301-6144	VeraCode Universal Bead Set, Code 6144	6144	TATGCTTCGCCGAGGACCACT
VC-301-6145	VeraCode Universal Bead Set, Code 6145	6145	GCAACGTGTCATTTCGCATCCTC
VC-301-6146	VeraCode Universal Bead Set, Code 6146	6146	AGGAGTCCAACCGCATCTTGCA
VC-301-6147	VeraCode Universal Bead Set, Code 6147	6147	CTCGGAACCTACTGCCGGATCA
VC-301-6148	VeraCode Universal Bead Set, Code 6148	6148	GTTGCCGACGGTTAAACCAGGT
VC-301-6150	VeraCode Universal Bead Set, Code 6150	6150	CGGTTAGCGAGTAATAGTGCCC
VC-301-6152	VeraCode Universal Bead Set, Code 6152	6152	AACTGGCAACGGTTTCTGCGT
VC-301-6153	VeraCode Universal Bead Set, Code 6153	6153	ACCGAAAGTCCCGGCTGTGGAT
VC-301-6156	VeraCode Universal Bead Set, Code 6156	6156	CTATCAGGGTCGCCATGTGTCA
VC-301-6160	VeraCode Universal Bead Set, Code 6160	6160	CCTCTTGTCGGAAGTCCACACG
VC-301-6162	VeraCode Universal Bead Set, Code 6162	6162	ACGCCAGACTCCGGTCCAAGTT
VC-301-6168	VeraCode Universal Bead Set, Code 6168	6168	TAGGCGTTGGACCCTACCATCA
VC-301-6176	VeraCode Universal Bead Set, Code 6176	6176	CACCGAACGGCAATGATCTGGT
VC-301-6177	VeraCode Universal Bead Set, Code 6177	6177	TGGCCGTACATCACTAACCGAC
VC-301-6180	VeraCode Universal Bead Set, Code 6180	6180	GACTGCAACCCGGCTCTGTCTA
VC-301-6192	VeraCode Universal Bead Set, Code 6192	6192	GCGAACGGTCCTGTATTGCAGT
VC-301-6208	VeraCode Universal Bead Set, Code 6208	6208	GGTCAACCAGCTTGATACGCCC
VC-301-6210	VeraCode Universal Bead Set, Code 6210	6210	CTTGTAGGAGCTGCGGAAGACT
VC-301-6216	VeraCode Universal Bead Set, Code 6216	6216	CCACATGCTCTCGGTGTGCAAT
VC-301-6240	VeraCode Universal Bead Set, Code 6240	6240	ATTCGGATCGCCCTTCTGCAA
VC-301-6272	VeraCode Universal Bead Set, Code 6272	6272	GCGACGTGGACTGCTTCAAACG
VC-301-6273	VeraCode Universal Bead Set, Code 6273	6273	GAGGGAACGTGAATGCTGCTCT
VC-301-6276	VeraCode Universal Bead Set, Code 6276	6276	GTCGGAGTAATTGTGCCACCA
VC-301-6288	VeraCode Universal Bead Set, Code 6288	6288	GTAICTCGCAGTCCCAGTGGCAT



REF	Description	VeraCode Bead Code	Probe Seq
VC-301-6336	VeraCode Universal Bead Set, Code 6336	6336	TTCGTGCTGGCTGAGAGCGTAA
VC-301-6400	VeraCode Universal Bead Set, Code 6400	6400	TAGCGCCTATCTGCCAGGGACT
VC-301-6402	VeraCode Universal Bead Set, Code 6402	6402	TCTGACTGGGAGATTCCGATGC
VC-301-6408	VeraCode Universal Bead Set, Code 6408	6408	TGAGCGCCTTCCCAACTGAGGA
VC-301-6432	VeraCode Universal Bead Set, Code 6432	6432	AACCGGAGCCCAAGTTGCTGTC
VC-301-6528	VeraCode Universal Bead Set, Code 6528	6528	TCCGGTCTTGCATGAAGAGGAG
VC-301-6656	VeraCode Universal Bead Set, Code 6656	6656	GATGCGACGACGACTATTCTGT
VC-301-6657	VeraCode Universal Bead Set, Code 6657	6657	GAGACGACAACCTTCTCGCAACC
VC-301-6660	VeraCode Universal Bead Set, Code 6660	6660	CAAGTGATTCGCCCGGTTAATC
VC-301-6672	VeraCode Universal Bead Set, Code 6672	6672	GTGCGAAATTCATTCCGACCGCT
VC-301-6720	VeraCode Universal Bead Set, Code 6720	6720	TTACGAACCGATGAGCACCTAGTA
VC-301-6912	VeraCode Universal Bead Set, Code 6912	6912	AATCCGTACTTGTTGCCATCCGTA
VC-301-7168	VeraCode Universal Bead Set, Code 7168	7168	GCCCATCCACTATTCGGAGGTAA
VC-301-7170	VeraCode Universal Bead Set, Code 7170	7170	TAATACGCCAGATGGTTGGTGAT
VC-301-7176	VeraCode Universal Bead Set, Code 7176	7176	TATTGCACCACCGCTACTGAGAAT
VC-301-7200	VeraCode Universal Bead Set, Code 7200	7200	GGATATGTCACCTACTGCAACGGA
VC-301-7296	VeraCode Universal Bead Set, Code 7296	7296	GTGGCATCATAACCATAAACGCTCG
VC-301-7680	VeraCode Universal Bead Set, Code 7680	7680	GTTACAATCCCTGGTTCCGTATGC



3.6. VeraCode Universal Bead Sets, Pools

REF VC-301-0481			
VeraCode Universal Bead Set, Pool 0481 (48-plex)			
BeadCode	Probe Sequence	BeadCode	Probe Sequence
3072	CGGATGCAATCGGTATCGGGAA	3588	CATGTGACCGTACTAACCGCTGA
3073	CATGGACGAACTCACGCGGCTT	3600	GCCGACAATTACCCGTTGCTAGA
3074	GCGATTGAAGTGC GGACCAATG	3648	CAGTTGCCGTCGTGTCATTGAGA
3075	GTCGCGCTTATGAATCGGATGC	3840	GATGCTCGTTCGTTGAAGTCCAG
3076	AGCCGTATCGGTTACCATGCCG	4098	GCCATTCCAACGGTGCAAAGGTT
3090	AGCACTGGAACCGCATTCTGGG	4099	GCATGGTCTTACAATCGGTAGGC
3096	TCTGCTAATCCCGCCAAAGTGC	4101	CCATAGAGCTTAGACCCGATCCA
3104	CCAGAAGGCTCGACATGGTTGA	4102	C GACTGAACGGCATCTGACATCA
3105	GAATCGTGGTACTGGTCAACCG	4104	GGATTACCATGTACGTGTGGAGC
3108	AAACTACCCGTGCTCTGGTCCA	4105	GGTGAGGTCCATACTCTTCGCAT
3120	AGCTTGGCCTCGGTCATCAGCA	4106	CGCAGATGAATCACGGAGGCTTT
3136	TCGTTGACCACCCACTCGTAGG	4107	CCAGACGGACCAGGGTGATATAAT
3138	GTGCCCTTACCCTGCGTGAATA	4108	TTGACCCTAAACAATTTCGTGCCTG
3144	TAGCCCACCGAAGAGTTGATGC	4110	CTAAGCGGATATGTTGGAAGCACG
3168	GTCACCCGGATTAAGACAGGCT	4113	ATATCTGTCCGGTAGAAAGCCTGGA
3200	ACGTCGCTTCTAGGTGGACAGT	4114	GGCCCTTTGAGTAGTATGAGCGTA
3201	ATAAGCACGTTCCAGTGAGCC		
3204	GCGGCGATCTAAGGAGAGTTCC		
3216	GTCGTTCCGCACAGCCAGTAG		
3264	ACGCCTCGTGGTGTGGAGATAA		
3328	TGGATCACCCATCTGTCGCGTA		
3330	GCAACTGGTCCTTCAGGCGAGA		
3336	CTAGGCTTCACAGATCGGCACG		
3360	AAGGACCTCAGTGGATAGCGTG		
3456	CACGCACTGGAGAGTATATGGC		
3584	CACAGCGGCTTGGCTTCAACAT		
3585	GTCGTTCCACTGGCTGGCAAAC		



REF VC-301-0482			
VeraCode Universal Bead Set, Pool 0482 (48-plex)			
BeadCode	Probe Sequence	BeadCode	Probe Sequence
44	ATCTGTACGAACGTAGCCGCAG	1968	TGACGAAGACTAGGGTTCCTCG
137	CTACCGAATCTACGGATCGCCA	1992	GCGAAACTTCGGACTCCTGAAC
237	CCTGGTAACGAGACGACTGGGT	2832	GCTCGACAATGAGTGGTGACCT
278	TTCTCGAATCTAGCGCCCTAGC	2911	CTCCTTTACCTGGCGAGGACAC
279	GTTGCACCGCAGATCGTAGGCT	2980	AGCAACGACTGGCCTCTTGACC
658	GTCACCTTCGGGCTAGGAACGT	3008	GGCGCTTCGATAAATGAGGCTC
662	CCAAGAGAGCGACGGGCTGTTT	3137	TCTTCCACGACACCTGGATGGA
737	GAGCACTCTAAGCGCGGTCAAT	3433	TTACGGCCCAAGTGTCAAGAGA
858	AACGGTGCTTTGTCGGGTCAAC	3511	CCCCGGATCACAACCTGCATGTT
910	CAAGACCCGTCGTTCTGTGGAC	3802	CCCAACGACACGGCTAAGTATGT
912	CCCTCTCACGAAGATTGAGCGC	3845	CTATCTCACCGACCAAATAGGCG
962	GTTTGAAGCCGGTCCGCAAG	3864	GGTTTGTGTGCGGATCTCAACGA
975	CTACGCCGTTGTAACACCTCGG	3885	CGAGATCGCTTGTACTCCCGTTA
1003	CCTCGAACTGTTGAGCGCGGAG	4254	GAGCTAATTCGTCCCCACACTGA
1070	GAGCTTTGGTGCGTTCGACAA	4824	CTTACACACGAACGTATCGGAATC
1112	AGACTCTTCACGAATGTCCCGC		
1142	GCGTCTATTGGATGCGGCACAT		
1209	TGGCGAGCTAGTTGCTAACGTC		
1235	CGCACGGATAGCTCTGACGGTT		
1251	CCTGTTCTGGGCACTAAGACTCC		
1306	CGATATTCGTAGCCGGGATCAC		
1365	AATCGCGTCCAGATACGTCCCT		
1611	CAATTTGCGACCCCTGAACAGC		
1632	TAGACAGACCCGGCACTGTGTA		
1696	CTTGTACGGCTCAGTTACAGCG		
1716	GCGAACTTCGAGGAATCATGCC		
1742	AGGCTTTAGGGTGCGGTACAT		
1878	TGGTAGGACGCAGAGCTATGCC		



4. Carboxyl Beads (Example Protocol)

The following sections include information about the equipment, materials, and reagents you will need in order to perform VeraCode Assays using Carboxyl Bead Sets on the BeadXpress Reader.

4.1. Equipment, User-Supplied

- Tube vortexer
- Microtiter plate centrifuge with g-force range of 8–3000 xg.
- Spectrofluorometer (optional)
Gemini XS or XPS (Molecular Devices)
- 8-channel precision pipettes (10 μ l and 200 μ l)
Optional: single-channel precision pipettes (10 μ l and 200 μ l)
- Stopwatch/timer
- Cap mat applicator, Corning PN 3081
- Vacuum flask assembly (flask, stopper, tubing, and vacuum source)
- Vacuum regulator, Qiagen catalog # 19530
- 96-well thermocycler with heated lid
- Plate shaker
Labline Instruments, Melrose Park, Illinois

4.2. Equipment, Illumina-Supplied

- Illumina Catalog # VC-101-1000, BeadXpress Reader System, 110V or
Illumina Catalog # VC-101-1001, BeadXpress Reader System, 220V
 - BeadXpress Reader (110V or 220V)
 - Reagent carrier
 - Reagent and waste bottles
 - USB Cable, Type A-B, 1.0 Meter
 - Detachable AC Line Cord, 2.0.1
 - PC workstation with monitor
 - BeadXpress Reader System Manual
 - VeraCode Assay Guide
 - BeadXpress Reader System CD



- BeadXpress Starter Kit (110V or 220V)
Illumina Catalog # VC-120-1000, BeadXpress Starter Kit 110V or
Illumina Catalog # VC-120 1001, BeadXpress Starter Kit 220V
The BeadXpress Starter Kit is included as a component of:
Illumina Catalog # VC-101-1000, BeadXpress Reader System, 110V or
Illumina Catalog # VC-101-1001, BeadXpress Reader System, 220V
- VeraCode Bead Kitting System
- VeraCode Vortex Incubator (110V or 220V)

4.3. Materials and Reagents, User-Supplied

4.3.1. General

- Safety glasses
- Protective gloves
- Lab coats

4.3.2. Quantitation and Kitting

- 1 X Phosphate Buffered Saline (1X PBS)
- 1 X Phosphate Buffered Saline + 1% Bovine Serum Albumin (PBS/BSA)
- 1 X Phosphate Buffered Saline + 0.05% Tween 20 (PBST)
- Wide-orifice pipette tips for Rainin Multichannel LTS Rainin HR-250W
- Reagent Reservoirs
25 ml divided Matrix #8096
50 ml Corning #4870

4.3.3. One-Step Carbodiimide Coupling of Amine-Terminated Oligos to Carboxyl VeraCode Beads

- EDC (freshly-made solution; 50 mg/ml in 0.1 M MES, pH 4.5; Pierce Cat # 22980)
- 5' Amine-terminated oligonucleotides
(1 uM synthesis is recommended)
- 0.1M MES, pH 4.5

4.3.4. Two-Step Protein Immobilization to Carboxyl VeraCode Beads

- 0.1M MES, pH 4.5
- Sulfo-NHS (freshly-made solution; 50 mg/ml in 0.1 M MES, pH 4.5; Pierce Cat # 24510)
- EDC (freshly-made solution; 50 mg/ml in 0.1 M MES, pH 4.5; Pierce Cat # 22980)



- PBS-Tween 20 (0.2%)
- PBS-BSA (1%) (Stored at 4°C)
- PBS-BSA (1%)-Proclin 300 (Stored at 4°C)
- BSA (Stock solution used to make 1% PBS-BSA) Sigma BSA 98% (# A7030-10g)
- 1M NaCl in ultra-pure water

4.3.5. Multiplex Cytokine Protein Assay

- 10x biotinylated detection antibody pool (stored at 4°C)
- Multiplex high standard pool (stored at -80°C)
- Multiplex cytokine standard beads (stored at 4°C)
- Streptavidin Phycoerythrin (stored at 4°C; 1 mg/ml)
- Cytokine Standards Diluent (CSD)
- Cytokine Reagent Diluent (CRD)
PBS/T/BSA (PBS pH 7.4, 0/1% BSA-Fraction V, 0.05% Tween 20, Proclin 300)
- Wash Buffer
PBS/T (PBS pH 7.4 and 0.05% Tween 20)



4.4. Materials and Reagents, Illumina-Supplied

This section describes the materials and reagents available from Illumina that are necessary to perform assays on the BeadXpress Reader using VeraCode Carboxyl Bead Sets.

Illumina supplies ten distinct VeraCode Carboxyl Bead Sets. Each set contains five tubes of Carboxyl Beads, each with its own distinct bead code. The exception is Set J, which contains only three tubes. Multiplexed assays can be performed by combining individual tubes of VeraCode Carboxyl Beads in order to reach the desired level of multiplexing (this is done post-coupling). Each tube of VeraCode Carboxyl beads is sufficient to analyze 6 x 96 samples.

The following VeraCode Carboxyl Bead Sets are available from Illumina:

VeraCode Carboxyl Bead Sets		
REF	Description	Contains BeadCodes
VC-311-8193	VeraCode Carboxyl Bead Set A	8193, 8195, 8196, 8197, 8198
VC-311-8199	VeraCode Carboxyl Bead Set B	8199, 8201, 8202, 8204, 8205
VC-311-8208	VeraCode Carboxyl Bead Set C	8208, 8209, 8210, 8211, 8212
VC-311-8214	VeraCode Carboxyl Bead Set D	8214, 8216, 8217, 8220, 8225
VC-311-8226	VeraCode Carboxyl Bead Set E	8226, 8228, 8229, 8232, 8234
VC-311-8240	VeraCode Carboxyl Bead Set F	8240, 8241, 8244, 8256, 8257
VC-311-8258	VeraCode Carboxyl Bead Set G	8258, 8259, 8260, 8262, 8264
VC-311-8265	VeraCode Carboxyl Bead Set H	8265, 8268, 8272, 8274, 828
VC-311-8288	VeraCode Carboxyl Bead Set I	8288, 8289, 8292, 8304, 8321
VC-311-8322	VeraCode Carboxyl Bead Set J	8322, 8324, 8325

The following materials are required for performing any assay on the BeadXpress Reader, including assays using VeraCode Carboxyl Bead Sets:

- VC-400-1001 BeadXpress System Buffer
VR1 Buffer, 10X--Reagent used in the BeadXpress Reader (500 mL)
- VC-321-1000 VeraCode Test and Calibration Kit
12 calibrations--Used to calibrate the BeadXpress Reader on a monthly basis.