

## LIVERPOOL® Mixed Gender Human Hepatocytes – 20-Donor Pool, Cryopreserved

**Product: X008000 | Lot: ASW**

**Storage: ≤ -150 °C**

### Post-Thaw Viability and Yield

	Specification	Results
<b>Viability</b>	≥ 80% post-thaw viability by trypan blue exclusion	<b>83</b> %
<b>Yield</b>	≥ 5 million viable cells	<b>6.27</b> million viable cells

*Post-thaw viability and yield are an average of samples from the beginning, middle, and end of the production run. All data generated without the use of Percoll.*

\*The process for producing the LIVERPOOL® pooled human hepatocyte products is covered by one or more U.S. or foreign patents and patent applications, including U.S. Patent No. 7,604,929.

### Metabolic Activity

Enzyme & Function	Substrate	Conc. [μM]	Metabolite	Result***
<b>ECOD</b> 7-Ethoxycoumarin O-Deethylation	7-Ethoxycoumarin	75	7-HC, 7-HCG, and 7-HCS**	<b>116</b>
<b>UGT</b> 7-Hydroxycoumarin Glucuronidation	7-Hydroxycoumarin	30	7-HCG	<b>542</b>
<b>ST</b> 7-Hydroxycoumarin Sulfation	7-Hydroxycoumarin	30	7-HCS	<b>24.5</b>
<b>CYP1A2</b> Phenacetin O-Deethylation	Phenacetin	15	Acetaminophen	<b>33.3</b>
<b>CYP2A6</b> Coumarin 7-Hydroxylation	Coumarin	8	7-HC, 7-HCG, and 7-HCS	<b>104</b>
<b>CYP2B6</b> Bupropion Hydroxylation	Bupropion	250	Hydroxybupropion	<b>30.1</b>
<b>CYP2C8</b> Amodiaquine N-Desethylation	Amodiaquine	20	Desethylamodiaquine	<b>279</b>
<b>CYP2C9</b> Tolbutamide Methyl-Hydroxylation	Tolbutamide	150	4'-Methylhydroxytolbutamide	<b>34.2</b>
<b>CYP2C19</b> S-Mephenytoin 4'-Hydroxylation	S-mephenytoin	20	4'-Hydroxymephenytoin	<b>11.6</b>
<b>CYP2D6</b> Dextromethorphan O-Demethylation	Dextromethorphan	8	Dextrorphan	<b>25.9</b>
<b>CYP2E1</b> Chlorzoxazone 6-Hydroxylation	Chlorzoxazone	100	6-Hydroxychlorzoxazone	<b>47.5</b>
<b>CYP3A4</b> Testosterone 6β-Hydroxylation	Testosterone	50	6β-Hydroxytestosterone	<b>136</b>
<b>CYP3A4</b> Midazolam 1-Hydroxylation	Midazolam	15	1-Hydroxymidazolam	<b>59.1</b>
<b>AO</b> Aldehyde Oxidase	Carbazeran	10	4-Hydroxycarbazeran	<b>71.3</b>
<b>UGT1A1</b> UDP-Glucuronosyltransferase	β-Estradiol	10	β-Estradiol-glucuronide	<b>32.2</b>

\*\*7-Hydroxycoumarin (7-HC), 7-Hydroxycoumarin glucuronide (7-HCG), 7-Hydroxycoumarin sulfate (7-HCS)

\*\*\*Metabolite rate of formation is measured in pmol/min/10<sup>6</sup> cells

Metabolic assays are run in triplicate. Activity results analyzed by HPLC-UV or LC/MS/MS validated procedures. Metabolite formation for all enzymes, except AO & UGT1A1, is measured after a 60 min. cell incubation at 37°C, 5% CO<sub>2</sub> and a final conc. of 1 million cells/mL. Metabolite formation for AO & UGT1A1 is measured after a 15 min. cell incubation at a final concentration of 0.25 million cells/mL.

Results for this lot have been derived through validated testing methods and confirmed by Quality Assurance.

**Caution:** This product was prepared from human tissue. Treat all products containing human-derived materials as potentially infectious, as no known test methods can offer assurance that products derived from human tissues will not transmit infectious agents.

X008000.7 / Page 1 of 4

This product is being sold for research and/or manufacturing purposes only. The biological samples supplied by BioIVT, or any material isolated from the samples, are for in-vitro research use only and are not to be used as a source of material for clinical therapies. Human material may be used in vivo in animals. The user assumes all responsibility for its usage and disposal, in accordance with all regulations.

### Donor Demographics, as reported to BioIVT

Age/ Gender	Race	Cause of Death	BMI	Social History	Medical History	EBV	Serology**** RPR	CMV
56 Male	Caucasian	Anoxia; 2nd to Cardio-vascular	26.3	Tobacco: 1-2ppd x 41yrs - never quit; Drugs: marijuana x 43yrs, experimented w/ cocaine 30yrs ago, Tox screen positive for fentanyl and opiates; No ETOH use	Diabetes: 8-10yrs - initially treated w/ Metformin but non-compliant over past 2yrs, neuropathy; Meds: Tylenol for headaches	Not Reported	Negative	Negative
47 Female	Caucasian	Cerebro-vascular/ Stroke	35.2	ETOH: 8oz vodka 2x/weekly x 26yrs; Tobacco: 3 cigarettes/day x 20yrs - quit 1 month ago; Drugs: No information reported - Tox screen positive for barbiturates, benzodiazepines, and opiates	No Medical History Reported; Toxoplasma and West Nile NAT negative	IgG+	Negative	Negative
56 Female	Caucasian	CNS Tumor, ICH	23.5	ETOH: Social drinker - a couple times/year - duration unknown; Tobacco: 1/2ppd x 30yrs - did not quit; Drugs: medical marijuana x 30yrs - did not quit	Fibromyalgia, psoriasis; Meds: Flexeril, fluoxetine, Norco	IgG+	Negative	Positive
56 Male	Caucasian	Anoxia; Cardio-vascular	24.3	ETOH: Heavy use - 2+ drinks daily; No Tobacco or Drug use	Hypertension - unknown duration or compliance, chest trauma, TBI, encephalopathy, MRSA; Toxoplasma IgG+	IgG +	Negative	Positive
51 Male	Caucasian	Anoxia	32.2	ETOH: Social; Tobacco: 0.5ppd x 18yrs - quit 15yrs ago; Drugs: no specifics provided	Hypertension and Diabetes - duration unknown	IgG+	Negative	Positive
61 Female	Caucasian	Anoxia/ Cardio-vascular	26.6	ETOH: 1-2 glasses of wine/night; Drugs: marijuana/THC via vape; No Tobacco use	Hypertension x 20yrs - compliant; hyperlipidemia x 15yrs - compliant	IgG+	Negative	Negative
13 Male	African American	SIGSW	17.3	No ETOH, Tobacco, or Drug use	Exercise induced asthma	IgG+	Negative	Positive
54 Female	African American	Anoxia/ Drug Intoxication	29.7	Tobacco: Few cigarettes/day x 2yrs - quit several years ago; Drugs: Usually cocktail of steroids, cocaine, meth and amphetamines but also "scramble pill" with heroin & fentanyl; No ETOH use.	No Medical History Reported	IgG+	Negative	Positive

\*\*\*\*BioIVT does not routinely accept HEP C, HEP B, or HIV positive tissue. Serology results for these viruses are negative unless otherwise specified.

### Donor Demographics, as reported to BioIVT

Age/ Gender	Race	Cause of Death	BMI	Social History	Medical History	EBV	Serology**** RPR	CMV
65 Female	Caucasian	Cerebro-vascular/ Stroke	24.2	ETOH: 1 beer couple times a year; Tobacco: 1.5ppd x 35-40yrs; No ETOH or Drug use	Pacemaker x 4yrs, OSA, DM Type II x 20yrs, CKD stage IIIB, Hypertension, osteoarthritis, dyslipidemia, GERD, anemia, cardiomyopathy, HFrEF, MI, HLD, shingles, benign hypertensive heart, leukocytosis, cardiac cath; Toxoplasma Negative; Allergies: Penicillin, Latex, Motrin, Bee stings; Meds: Prednisone, dietary supplement, insulin	IgG+	Negative	Negative
58 Female	Caucasian	Anoxia	32.7	ETOH: 2 glasses wine/night entire adult life; Tobacco: 1/2ppd x 6yrs - quit 34yrs ago; No Drug use	Idiopathic pulmonary fibrosis, hypertension x 8yrs, high cholesterol, HLD x 8yrs, gallbladder removal; Meds: albuterol, Prozac, hydrochlorothiazide	IgG+	Negative	Positive
22 Female	Caucasian	Anoxia; Cardio-vascular	31.6	No ETOH, Tobacco, or Drug use	Seizures, epilepsy, Esotropia surgery 19yrs ago; Toxoplasma negative; Meds: Lamictal, Zoloff and Seroquel.	Negative	Negative	Negative
48 Male	Caucasian	Anoxia/ Cardio-vascular	25.8	ETOH: use unknown; Tobacco: frequency and duration unknown; No Drug use	Diabetes x 15yrs; Meds: Metformin	IgG+	Negative	Negative
59 Male	African American	Anoxia/ Cardio-vascular	22.9	ETOH: drank beer and liquor - unknown frequency x 13yrs; Tobacco: 1/2ppd x 30yrs; Drugs: No use reported, Tox screen positive for cocaine, fentanyl, and benzodiazepines	COPD and asthma - duration unknown	IgG +	Negative	Positive
47 Male	Caucasian	Head trauma/ Suicide	27.0	ETOH: Heavy drinker in his 20's, rarely drinks currently; Tobacco: 1 cigarette every 2 weeks x 1yr; Drugs: smoked marijuana as a teenager	Asthma	IgG+	Negative	Positive
39 Male	Caucasian	Anoxia; 2nd to Drug Intoxication	26.7	ETOH and Drug use: unknown amount and duration; No Tobacco use	No Medical History Reported	IgG+	Negative	Negative

\*\*\*\*BioIVT does not routinely accept HEP C, HEP B, or HIV positive tissue. Serology results for these viruses are negative unless otherwise specified.

### Donor Demographics, as reported to BioIVT

Age/ Gender	Race	Cause of Death	BMI	Social History	Medical History	EBV	Serology**** RPR	CMV
45 Female	Caucasian	GSW to abdomen	27.6	ETOH: 1 beer on weekends x 5yrs; Tobacco: 1/2ppd x 8yrs - not current; No Drug use	Pacemaker 3yrs ago, cardiac cath 1yr ago, cardiac electrophysiology procedure 3yrs ago, hypertension - duration unknown, uterine cancer 15+ yrs ago - hysterectomy resolved, no signs since, no chemo or radiation	IgG+	Negative	Positive
11 Male	Hispanic	Anoxia; Seizure SAH; 2nd to Fall down stairs	17.9	No ETOH, Tobacco or Drug use	Pneumonia 9mos ago, Cerebral Palsy, G-Tube, scoliosis, Lennox-Gastaut, refractory seizures, Restrictive Lung Disease; Toxoplasma negative	IgG+	Negative	Negative
68 Female	Asian	Head Trauma/ Blunt Injury/MVA	20.1	Tobacco: 1/2ppd x 30yrs; No ETOH or Drug use	CVA x 2yrs, hypertension- compliant, osteoporosis MVA 10yrs ago resulting in cranioplasty, chest trauma; Toxoplasma negative	Not Reported	Negative	Positive
29 Male	Caucasian		27.5	ETOH Abuse; No Tobacco or Drug use Reported ETOH: liquor - unknown frequency; Tobacco: cigarettes 10 years ago - unknown duration and frequency; Drugs: meth, marijuana, unknown pills, IVDA		IgG+	Negative	Negative
38 Female	Hispanic/ Latino	Anoxia	35.7		Asthma, CHF diagnosis 1- 2yrs ago, oral meds; Hypertension ≥ 4yrs - unknown compliance; Diabetes - unknown duration	IgG+	Negative	Positive

\*\*\*\*BioIVT does not routinely accept HEP C, HEP B, or HIV positive tissue. Serology results for these viruses are negative unless otherwise specified.

As of March 5<sup>th</sup>, 2018, "BioIVT" will replace the current brand of BioreclamationIVT and those of each of its affiliates and subsidiaries: IVT Holdings Inc., Asterand Bioscience, Inc., Asterand UK Acquisition limited, Asterand US Acquisition Corporation, Labquote.com LLC, ILSBio LLC, Seratrials LLC, Sera Laboratories International Ltd., Translational Cell Science LLC, Bioreclamation-IVT India Private Limited, In Vitro Inc., In Vitro GmbH, Qualyst Holdings LLC, Qualyst Transporter Solutions LLC.