



CUTECH Screening Services Pipeline on Human Ex-vivo Models

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The list may not be exhaustive of the screening possibilities. For any special need, please contact us.

MODEL	CLAIM	READ-OUT	LIST OF MARKERS/STAINING	ABBREVIATION	METHODOLOGY	
SKIN	Viability	Viability	MTT test		C	
		Morphology	Haematoxylin Eosin	H&E	HC	
		Proliferation	Marker of proliferation KI-67	KI67	IHC	
		Apoptosis	Tunel assay		IHC	
	Pigmentation	Melanin	Fontana-Masson	FM	HC	
		Tyrosinase	Tyrosinase	TYR	IHC	
		Various Markers	Tyrosinase Related Protein 1	TYRP1		
			Dopachrome Tautomerase (Tyrosinase Related Protein 2)	DCT/TYRP2		
		Melan-A	Melan-A	MLANA		
	UVB-induced hyperpigmentation	Melanin	Fontana-Masson	FM	HC	
		Melan-A	Melan-A	MLANA	IHC	
	Aging	Total collagen	Picrosirius Red	PSR	HC	
		Elastin	Elastica Van Gieson		HC	
			Elastin	Elastin	ELN	IHC
		Pro-collagen 1	Pro-Collagen I alpha 1	CO1A1	ELISA in medium	
					qRT-PCR	
		MMP	Matrix Metallopeptidase 1	MMP1	qRT-PCR	
					IHC	
		Mitochondrial markers	Translocase Of Outer Mitochondrial Membrane 20	TOMM20	IHC	
			Mitochondrial Dynamin Like GTPase	OPA1		
		Epidermis markers	Advanced glycation end products	CD44 molecule	CD44	IHC
				Heparin Binding EGF Like Growth Factor	HBEGF	
				Syndecan	SDC	
Heat Shock Protein Family B (Small) Member 1				HSPB1		
Crystallin Alpha B	CRYAB					

SKIN	Aging	Dermal-epidermal junction markers	Collagen type 7	COL7A1	IHC
			Collagen type 4	COL4A1	
			Laminin Subunit alpha 5	LAMA5	
			Tenascin C	TNC	
		Dermis markers	Tenascin X	TNX	IHC
			Collagen type 1	COL1A1	
			Collagen type 3	COL3A1	
			Fibrillin 1	FBN1	
			Fibronectin	FN1	
			Hyaluronan Binding Protein	HABP	
			Integrin Subunit Beta 1	ITGB1	
			Decorin	DCN	
			TIMP metalloproteinase inhibitor 1	TIMP1	
			Photoaging*	CPD	
	p53	Tumor Protein P53		p53	IHC
	AGE	Advanced glycation end products		AGE	IHC
	Sun burn cells	Haematoxylin Eosin		H&E	HC
	ROS				DCFH-DA
	Lipid oxidation	4 Hydroxynonenal		4-HNE	IHC
	Protein oxidation (oxyblot)				WB
	Total Collagen	Picrosirius Red		PSR	HC
	Collagen III	Collagen type 3		COL3A1	IHC
	Elastin	Elastica Van Gieson			HC
		Elastin		ELN	IHC
	TIMP	TIMP metalloproteinase inhibitor 1		TIMP1	IHC
	MMP	Matrix Metalloproteinase 1		MMP1	qRT-PCR IHC
	TRPV1	Transient receptor potential vanilloid 1		TRPV1	IHC
	Oxidative stress	CPD		Cyclobutane pyrimidine dimers	CPD
		ROS			DCFH-DA
		Lipid oxidation	4 Hydroxynonenal	4-HNE	IHC
		Protein oxidation (oxy-ELISA)			ELISA in tissue homogenates
		Protein oxidation (oxyblot)			WB
		AGE	Advanced glycation end products	AGE	IHC

SKIN	Oxidative stress	Various markers	Catalase	CAT	qRT-PCR
			Glutamate-Cysteine Ligase Catalytic Subunit	GCLC	
			Heme Oxygenase 1	HMOX1	
			NAD(P)H Quinone Dehydrogenase 1	NQO1	
	Pollution	ROS			DCFH-DA
		Protein oxidation (oxy-ELISA)			ELISA in tissue homogenates
		Protein oxidation (oxyblot)			WB
		Environmental sensor	Aryl hydrocarbon Receptor	AhR	IHC
		Barrier integrity	Rhodamine B		Rhodamine B
		Interleukin 8	Interleukin 8	IL-8	ELISA in medium
	Moisturization	Hyaluronic acid			ELISA in medium
		Acidic GAGs (Hyaluronic acid)	Alcian Blue	HA	HC
		Various markers	Decorin	DCN	IHC
			Heparan Sulfate Proteoglycan 2 (Perlecan)	HSPG2	
			Syndecan	SDC	
			Hyaluronan Binding Protein	HABP	
			Hyaluronan Synthase	HAS2	
	Stratum Corneum Regeneration / Skin barrier	Filaggrin	Filaggrin	FLG	IHC
		Stratum corneum thickness	Haematoxylin Eosin	H&E	HC
		Penetration assay	Rhodamine B		Rhodamine B
		Various markers	Involucrin	IVL	IHC
			Keratin 5	KRT5	
			Keratin 10	KRT10	
Keratin 14			KRT14		
Kallikrein Related Peptidase 5			KLK 5		
Kallikrein Related Peptidase 7			KLK7		
Occludin			OCLN		
Claudin 1			CLD1		
Desmocollin 1			DSC1		
Desmoglein 1			DSG1		
E-cadherin			CDH1		
Olfactory Receptor Family 2 Subfamily AT Member 4	OR2AT4				
3-Hydroxy-3-Methylglutaryl-CoA Reductase	HMGCR		IHC		

SKIN	Stratum Corneum Regeneration / Skin barrier		5-Hydroxy-5-methylglutaryl-CoA reductase	HMGCR	qRT-PCR	
			Peptidase Inhibitor 3	PI3	IHC	
			S100 Calcium Binding Protein A7	S100A7		
			Transglutaminase 1	TGM1	qRT-PCR	
			UDP-Glucose Ceramide Glucosyltransferase	UGCG	WB	
	Epidermis Regeneration	Epidermal recovery		Keratin 14	KRT14	IHC
		Morphology		Haematoxylin Eosin	H&E	HC
		Various markers		Integrin Subunit Beta 1	ITGB1	IHC
				Keratin 6	KRT6	
				Alpha smooth muscle Actin	ACTA2	
	Retinoid response	Various markers		Aldehyde Dehydrogenase 1 Family Member A3	ALDH1A3	IHC
				Heparin Binding EGF Like Growth Factor	HBEGF	qRT-PCR
				Cellular Retinoic Acid Binding Protein 2	CRABP2	
				Keratin 4	KRT4	
	Inflammation SDS IL-1alpha UV	Interleukins		Interleukin 1 alpha	IL-1alpha	ELISA in medium
				Interleukin 6	IL-6	
				Interleukin 8	IL-8	
		Prostaglandins		Prostaglandin E2	PGE2	ELISA in medium
		PCR array for human inflammation				qRT-PCR
	Irritation (e.g. induced by SDS)	Interleukins		Interleukin 1 alpha	IL-1alpha	ELISA in medium
				Interleukin 6	IL-6	
				Interleukin 8	IL-8	
	Steroidogenesis	Various markers		Hydroxysteroid 11-Beta Dehydrogenase 1	HSD11B1	IHC
			Hydroxysteroid 17-Beta Dehydrogenase 1	HSD17B1		
			Hydroxysteroid 17-Beta Dehydrogenase 2	HSD17B2		
Autophagy	ATG4B		Autophagy Related 4B Cysteine Peptidase	ATG4B	IHC	
	BECN1		Beclin 1	BECN1		
	Epidermal thickening evaluation		Haematoxylin Eosin	H&E	HC	
SUBCUTIS	Fat Management	Free glycerol release			C	
		Total Lipid quantification			Infrared Spectroscopy	
		Various markers		Leptin	LEP	qRT-PCR
				Adiponectin	ADIPOQ	WB
						qRT-PCR

HAIR	Viability	Viability	Resazurin assay		C		
		Morphology	Haematoxylin Eosin	H&E	HC		
	Hair Growth	Hair shaft elongation				Analysis at the stereomicroscope	
		Cell proliferation/apoptosis	Marker of proliferation KI-67		KI-67	IHC	
			Tunel				
		Various markers/key receptors	Transforming Growth Factor Beta Receptor 2		TGFBR2		qRT-PCR
	Fibroblast Growth Factor 7			FGF7 (KGF)			
	Hair pigmentation	Melanin amount	Fontana-Masson		FM	HC	
		Various markers	Pro-melanosome protein		PMEL (INKI-hateb)	IHC	
			Tyrosinase Related Protein 1		TYRP1		
Tyrosinase				TYR		qRT-PCR	
Oxidation	ROS				DCFH-DA		
SEBACEOUS GLAND	Viability	Viability	Resazurin assay		C		
	Sebum secretion (Skin)	Total Lipid quantification				Infrared Spectroscopy	
		Various markers	Fatty Acids Desaturase 2		FADS2	WB	
			Stearoyl-CoA Desaturase		SCD	WB	qRT-PCR
			Peroxisome Proliferator Activated Receptor Alpha		PPARA		qRT-PCR
	Sebum secretion (Hair follicle)	Total Lipid quantification				Infrared Spectroscopy	
		Various markers	Fatty Acids Desaturase 2		FADS2	WB	
			Stearoyl-CoA Desaturase		SCD	WB	qRT-PCR
			Peroxisome Proliferator Activated Receptor Alpha		PPARA		qRT-PCR
	Notes:						
Possibility of executing more HC and IHC stains on the same experimental samples.							
Possibility of performing RNA sequencing or customized PCR array analysis.							
*Available irradiation sources: UVA, UVB, UVA/UVB, Visible light and Blue light							
Acronyms							
C = Colorimetric							
DCFH-DA = Dichlorofluorescein diacetate assay							
GAG = Glycosaminoglycans							
HC = Histo Chemistry							

IHC = Immuno Histo Chemistry				
qRT-PCR = Quantitative real-time polimerase				
ROS = Reactive Oxygen Species				
WB = Western Blot				