STL DYNAMICS

PRODUCT GUIDE

Human Shaders for URP

Human Shaders for URP

Human Shaders for URP is an STL Dynamics character-rendering toolkit for Unity's Universal Render Pipeline. It provides dedicated shaders and editor workflows for:

- Skin
- Hair
- Eyes
- Tongue
- Teeth
- Clothing
- Skin visibility / clothing hide regions
- Shared material profiles
- Packed texture creation
- Diagnostics and material synchronization

The main authoring workspace is:

Tools > STL Dynamics > Human Shaders Studio

Documentation

- Quick Start - get a character converted and rendering quickly.
- Materials & Texture Maps - shader roles, profiles, channel packing, and import rules.
- Skin Visibility Quick Start - fast setup for hiding skin beneath clothing.
- Skin Visibility System - painted regions, exact hide zones, visibility sets, and overlapping garments.
- Runtime API - runtime profiles, visibility calls, request tokens, and material synchronization.
- Troubleshooting - common setup, texture, shadow, visibility, and rendering issues.

Main Shader Names

Human Shaders installs the following shaders:

```
STL Dynamics/Human/Skin
STL Dynamics/Human/Hair
STL Dynamics/Human/Eye
STL Dynamics/Human/Tongue
STL Dynamics/Human/Teeth
STL Dynamics/Human/Clothing
```

Materials can be created directly from the Project window under the centralized Human Shaders menu:

```
Create > STL Dynamics > Human Shaders > Materials > Human Skin Material
Create > STL Dynamics > Human Shaders > Materials > Human Hair Material
Create > STL Dynamics > Human Shaders > Materials > Human Eye Material
Create > STL Dynamics > Human Shaders > Materials > Human Tongue Material
Create > STL Dynamics > Human Shaders > Materials > Human Teeth Material
Create > STL Dynamics > Human Shaders > Materials > Human Clothing Material
```

For converting an existing character, the Human Shaders Studio workflow is recommended because it creates new materials and preserves the originals.

Human Shaders Studio

The Studio contains five workspaces:

Overview

A workflow summary and links to the main tools.

Materials

Converts selected renderer materials into Human Shader materials.

Conversion is intentionally non-destructive:

- Source materials are not modified in place.
- New Human Shader materials are created beside the source assets.
- Compatible textures and values are copied where possible.
- Existing Human Shader material slots are left intact.
- Optional profiles can be applied during conversion.

Texture Packing

Creates packed, linear RGBA data maps for each shader family.

Available packers:

- Skin
- Hair
- Eyes
- Tongue
- Teeth
- Clothing

The packer imports generated textures as linear data with sRGB disabled.

Skin Visibility

Provides two authoring approaches:

- Painted geometry regions for reusable body-part hiding.
- Exact hide zones using sphere, box, capsule, or custom convex volumes.

Diagnostics

Checks:

- Required Human Shaders are installed.
- URP is active.
- Human Shader texture import settings.
- Normal-map import types.
- Painted visibility profile integrity.
- Duplicate or missing runtime region IDs.

Diagnostics can also synchronize selected Human Shader materials.

Profiles

Profiles store texture-independent material response settings that can be shared across materials.

Create them from the Project window:

```
Create > STL Dynamics > Human Shaders > Profiles
```

Available profile types:

- Skin Profile
- Hair Profile
- Eye Profile
- Tongue Profile
- Teeth Profile
- Clothing Profile
- Skin Paint Profile
- Skin Visibility Set

A profile does not replace a material's character-specific textures. It stores shared response values such as roughness, subsurface behavior, wetness, transmission, optical settings, or clothing material characteristics.

Material setup and editor-side profile application are centralized in Human Shaders Studio. The Skin, Hair, Eye, Tongue, Teeth, and Clothing profile Inspectors no longer contain Load Material or Apply To Material actions. Instead, each profile Inspector provides Open Human Shaders Studio. Pressing it opens the Materials workspace, selects the matching shader family, and preloads that profile into the Studio's Optional Profile field.

Recommended Workflow

1. Confirm the project is using URP.
2. Open Tools > STL Dynamics > Human Shaders Studio.
3. Select the character renderer or character root.
4. Convert Skin, Hair, Eyes, Tongue, Teeth, and Clothing from the Materials workspace.
5. Assign or pack the appropriate data maps.

6. Tune each Human Shader material in its custom Inspector.
7. Create reusable profiles when multiple materials should share the same response. Apply them through the Materials workspace; profile assets provide Open Human Shaders Studio for this workflow.
8. If clothing needs body masking, configure the Skin Visibility workspace.
9. Run Diagnostics.
10. Test the character under multiple lights, distances, poses, and camera angles.

Important Texture Import Rule

Human Shader data maps are not color textures. They should normally use sRGB disabled.

Normal maps should be imported as Normal Map textures.

The built-in Diagnostics workspace checks these settings for Human Shader materials.

See Materials & Texture Maps for exact channel layouts.

Runtime Namespace

Runtime scripts are contained in:

```
using STLDynamics.HumanShader;
```

See Runtime API for examples.