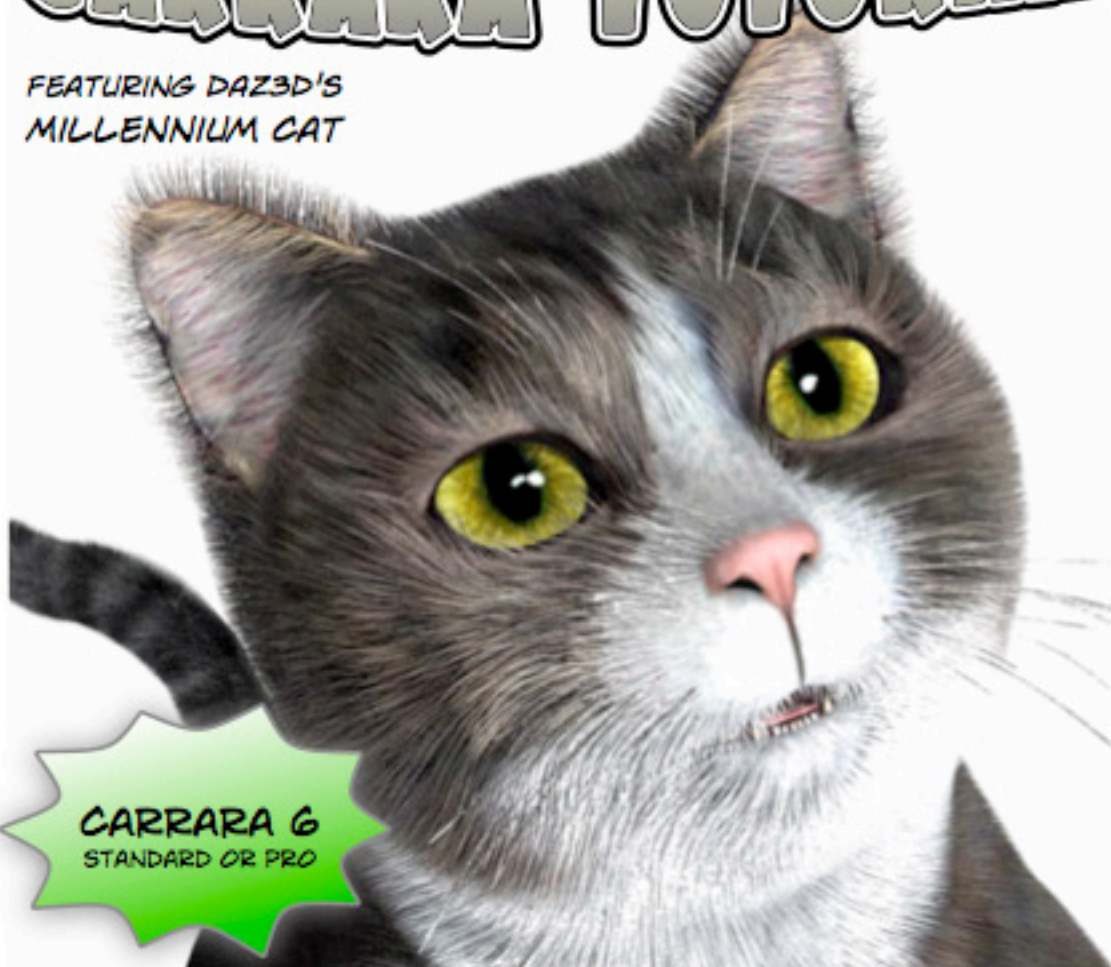# FUR
Carrara Tutorial

FEATURING DAZ3D'S
MILLENNIUM CAT

CARRARA 6
STANDARD OR PRO

GOAL:
CREATE REALISTIC FUR IN **CARRARA 6**.

REQUIREMENTS:
CARRARA 6 PRO OR STANDARD
ANY 3D FIGURE LIKE DAZ3D'S **MILLENNIUM CAT**
A **PAINT PROGRAM** IS RECOMMENDED, BUT NOT REQUIRED

SKILL LEVEL:
COMFORTABLE WITH CARRARA SHADERS
NEW TO HAIR ROOM

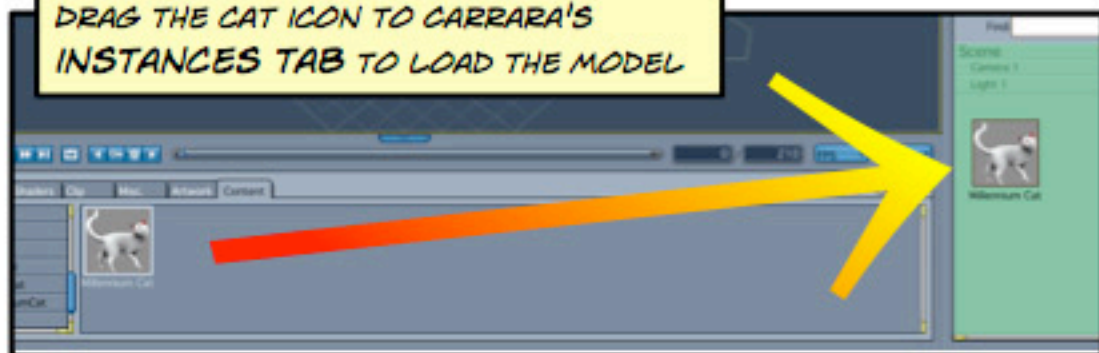WE'LL GO STEP-BY-STEP
FROM LOADING CONTENT
TO FINAL RENDER.

**STEP 1:
LOAD THE
MODEL**

LAUNCH **CARRARA 6** AND OPEN A
NEW EMPTY MEDIUM-SIZED SCENE.

USE THE BROWSER TO NAVIGATE TO
YOUR **RUNTIME** OR **CONTENT**
FOLDER WHERE **MILLENNIUM**
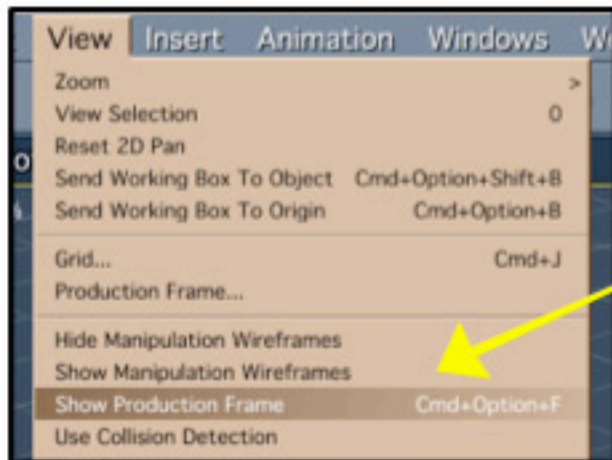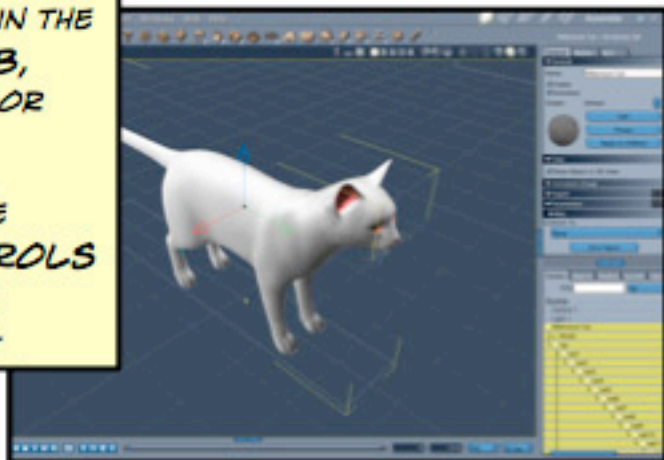**CAT** IS INSTALLED.

DRAG THE CAT ICON TO CARRARA'S
INSTANCES TAB TO LOAD THE MODEL

SELECT THE CAT IN THE **INSTANCES TAB**, BUT DON'T POSE OR MOVE HIM YET...

INSTEAD, USE THE **CAMERA CONTROLS** TO POSITION THE CAMERA CLOSER.
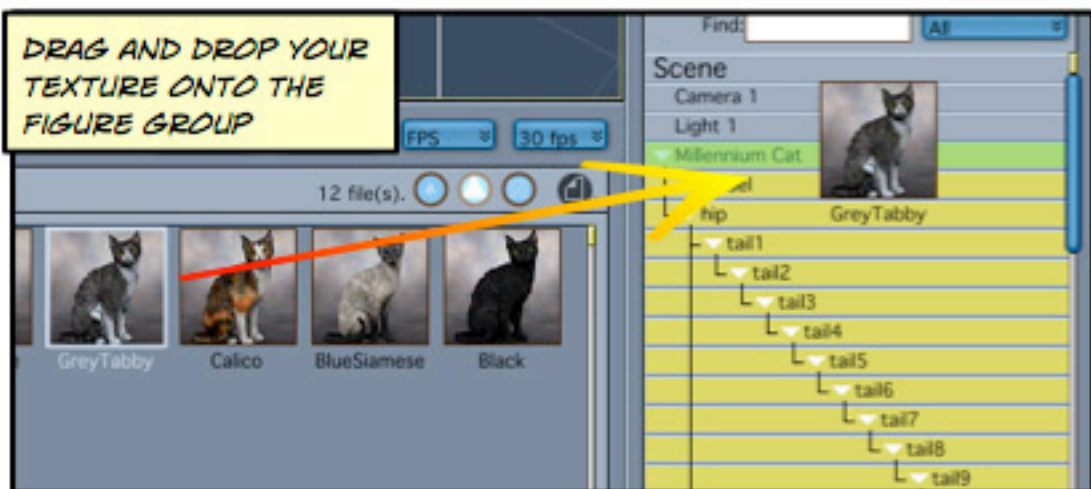

View	Insert	Animation	Windows	W
Zoom				>
View Selection				O
Reset 2D Pan				
Send Working Box To Object		Cmd+Option+Shift+B		
Send Working Box To Origin		Cmd+Option+B		
Grid...		Cmd+J		
Production Frame...				
Hide Manipulation Wireframes				
Show Manipulation Wireframes				
Show Production Frame		Cmd+Option+F		
Use Collision Detection				

TIP!

TO MAKE POSITIONING THE CAMERA EASIER:

VIEW -->
SHOW PRODUCTION FRAME

DRAG AND DROP YOUR TEXTURE ONTO THE FIGURE GROUP

STEP 2: FUR!
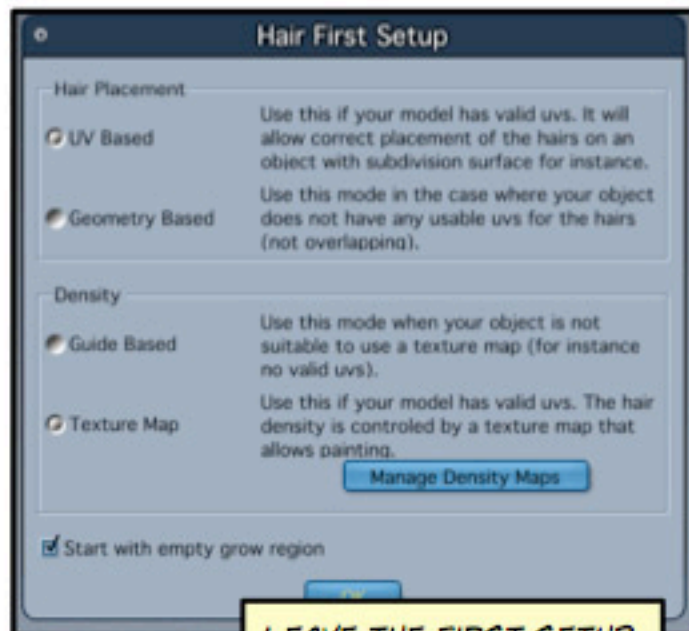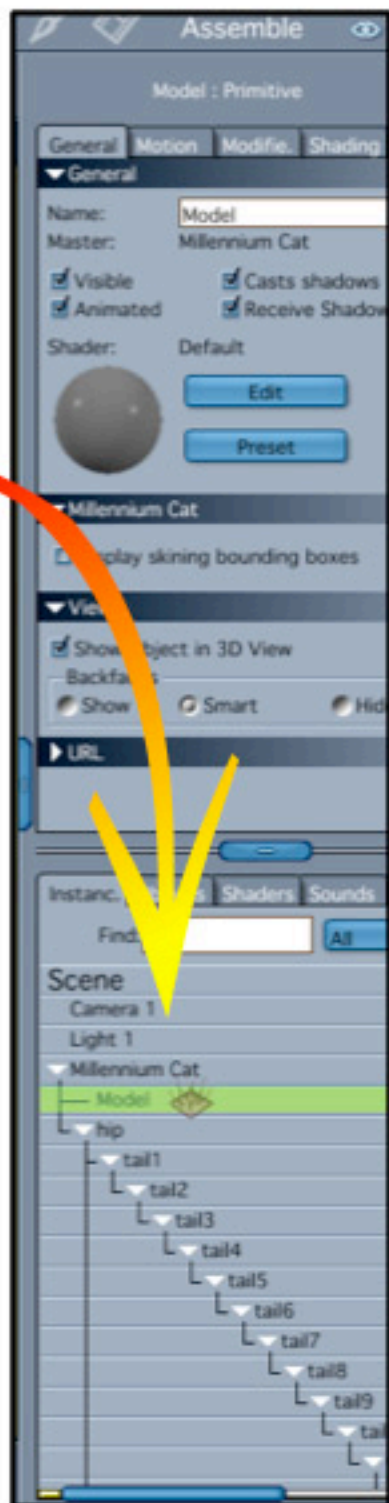
LETS ADD FUR TO OUR MODEL!

eb   Help

FIND THE **HAIR** ICON AND DRAG IT TO THE **INSTANCES** TAB.
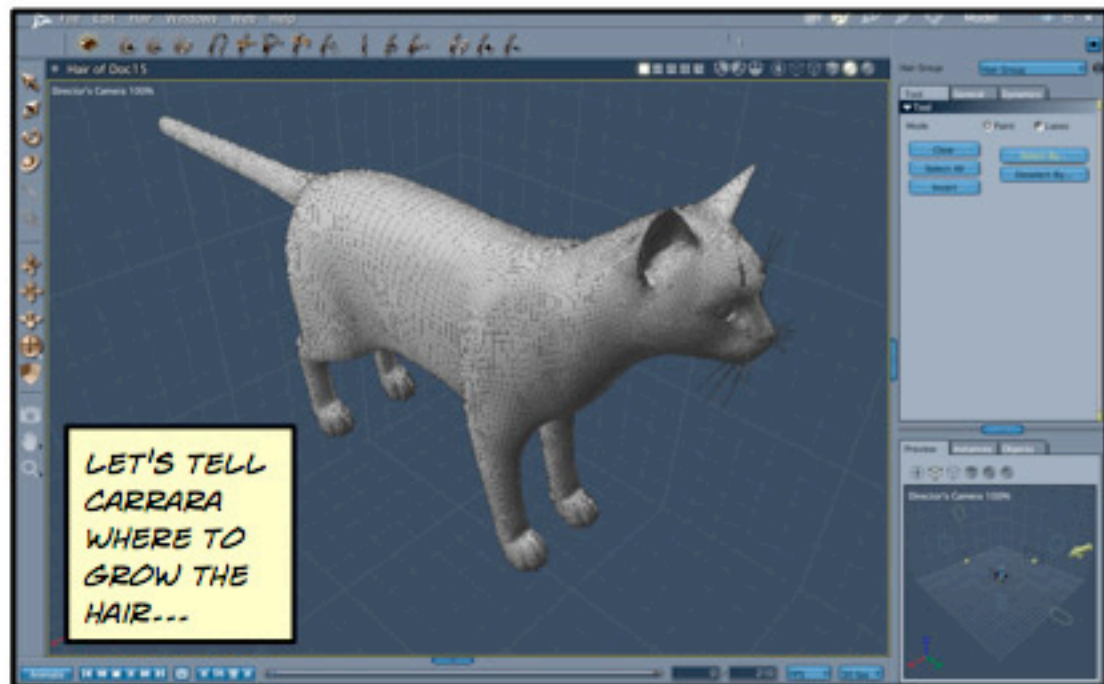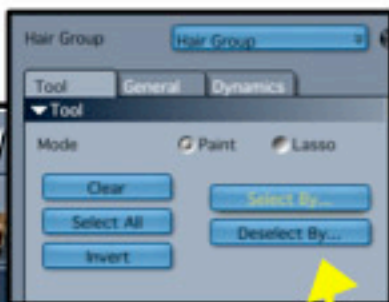
DROP IT ONTO THE **MODEL** TO PARENT IT.

THE **HAIR ROOM** WILL OPEN...

Hair First Setup

Hair Placement

○ UV Based — Use this if your model has valid uvs. It will allow correct placement of the hairs on an object with subdivision surface for instance.

○ Geometry Based — Use this mode in the case where your object does not have any usable uvs for the hairs (not overlapping).

Density

○ Guide Based — Use this mode when your object is not suitable to use a texture map (for instance no valid uvs).

○ Texture Map — Use this if your model has valid uvs. The hair density is controlled by a texture map that allows painting.

Manage Density Maps

☑ Start with empty grow region

LEAVE THE FIRST SETUP DIALOG ALONE. HIT OK!

Assemble

Model : Primitive

General | Motion | Modifie. | Shading

▼ General

Name: Model
Master: Millennium Cat

☑ Visible   ☑ Casts shadows
☑ Animated   ☑ Receive Shadow

Shader: Default

Edit

Preset

▼ Millennium Cat

☐ isplay skining bounding boxes

▼ Vie

☑ Show bject in 3D View
Backfa

○ Show   ○ Smart   ○ Hid

▶ URL

Instanc. s Shaders Sounds

Find: All

Scene
Camera 1
Light 1
Millennium Cat
— Model
hip
tail1
tail2
tail3
tail4
tail5
tail6
tail7
tail8
tail9
tai

LET'S TELL CARRARA WHERE TO GROW THE HAIR...

SELECT THE **GROW REGION TOOL**

Grow Region Tool

Select Shading Domain

Fur
Teeth
Whiskers
EyeRim
InnerEar

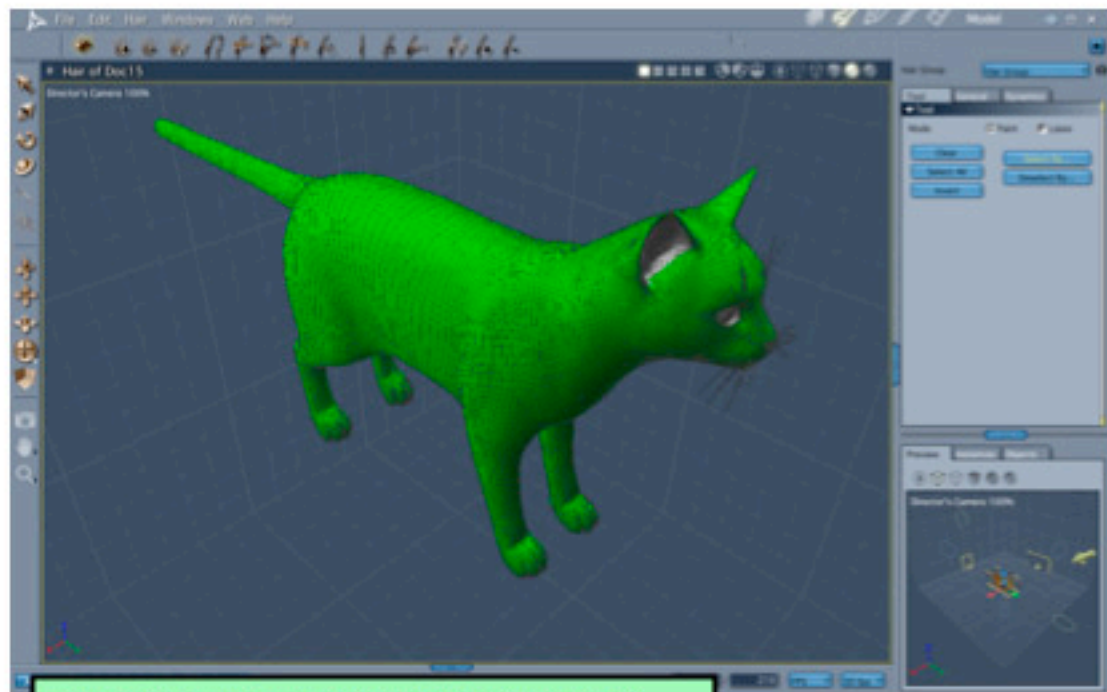Cancel   OK

WE CAN PAINT DIRECTLY ON THE MODEL, BUT THE CAT ALREADY HAS A FUR SHADER DOMAIN...

UNDER THE **TOOL TAB**, CLICK THE **SELECT BY...** BUTTON AND CHOOSE **SHADER DOMAINS**.

SELECT THE DOMAIN CALLED "FUR".

THE SELECTED DOMAIN TURNS GREEN...
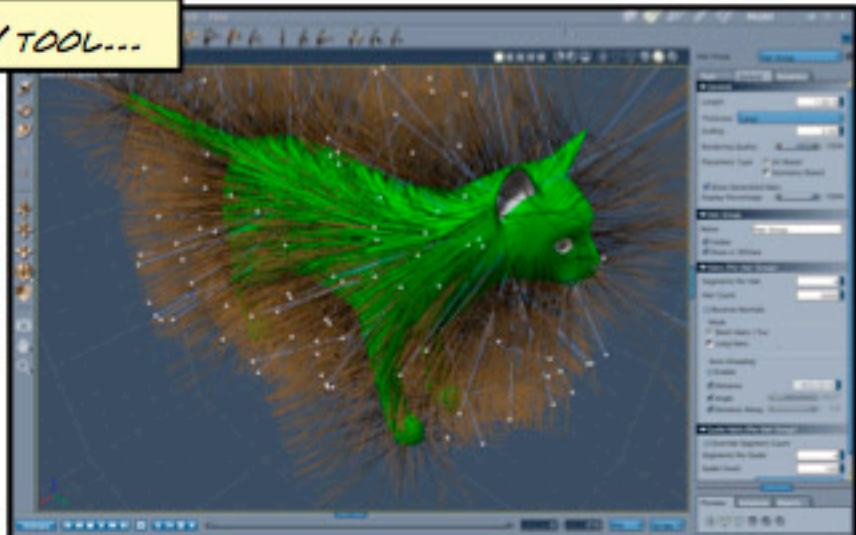
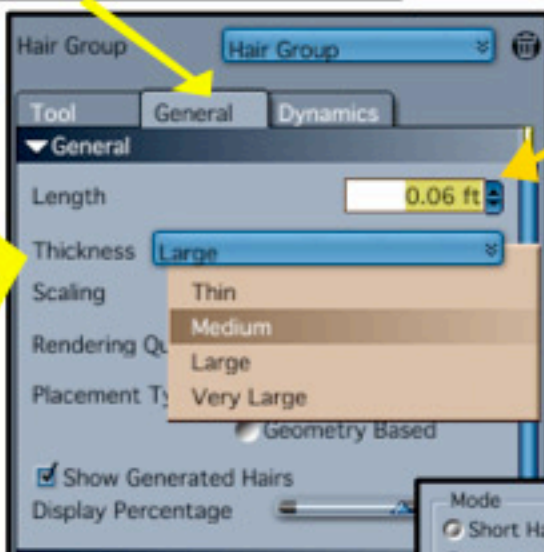BUT WHERE IS THE HAIR?

UNSELECTED AREAS ARE GREY.

SELECT ANY TOOL...

WOAH!
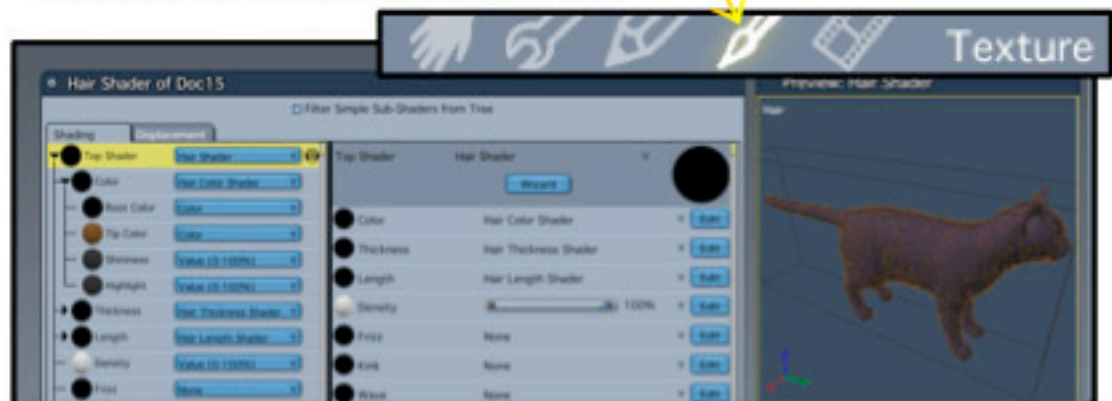
THE HAIR IS
TOO LONG!

STEP 3:
HAIR
SHADER

OK, WE'VE GOT SOME HAIR ON OUR CAT.
IT'S THE RIGHT LENGTH, BUT IT IS THE WRONG **COLOR.**

CARRARA'S DEFAULT HAIR IS **BLACK** AND **BROWN.**
WE WANT OURS TO MATCH THE CAT TEXTURE.

SELECT THE **HAIR** OBJECT IN THE **INSTANCES TAB.**
LET'S GO TO THE **SHADER ROOM!**

Texture

Hair Shader of Doc15

☐ Filter Simple Sub-Shaders from Tree

| Shading | Displacement |

Top Shader — Hair Shader
  Color — Hair Color Shader
    Root Color — Color
    Tip Color — Color
    Shininess — Value (0-100%)
    Highlight — Value (0-100%)
  Thickness — Hair Thickness Shader
  Length — Hair Length Shader
  Density — Value (0-100%)
  Frizz — None
  Kink — None
  Wave — None
  Clump — None

Top Shader   Hair Shader

[Wizard]

Color	Hair Color Shader	Edit
Thickness	Hair Thickness Shader	Edit
Length	Hair Length Shader	Edit
Density	▬▬▬ 100%	Edit
Frizz	None	Edit
Kink	None	Edit
Wave	None	Edit
Clump	None	Edit

Shader Preview
☑ Show Hairs
Hair Quantity   ▬▬▬   100%

CARRARA'S **HAIR SHADER** HAS FUNCTIONS THAT CONTROL THE WAY HAIR AND FUR ARE RENDERED. YOU CAN CHANGE THE COLOR, BUT YOU CAN ALSO CHANGE THE **LENGTH** AND **THICKNESS** OF HAIRS!

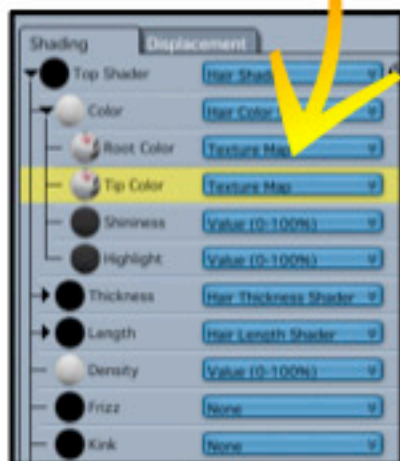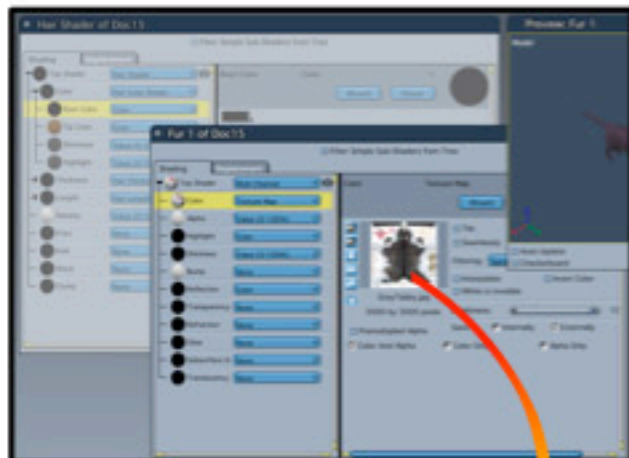LET'S CHANGE THE HAIR COLOR TO MATCH THE CAT'S SKIN TEXTURE.

IN THE SHADER ROOM UNDER THE **INSTANCES TAB** CLICK ON THE **MODEL** TO BRING UP THE CAT'S TEXTURE LIST...

WE WANT TO COPY THE **IMAGE MAP** THAT IS ASSIGNED TO THE "FUR" SHADER DOMAIN. DOUBLE-CLICK THE SHADER TO OPEN IT.

Shading Domains
Fur
  Fur 1
Teeth
  Teeth 1
Whiskers
  Whiskers 1
EyeRim
  EyeRim 1
InnerEar
  InnerEar 1
InnerMouth
  InnerMouth 1

| Preview | Instances | Shaders |

Scene
  Camera 1
  Light 1
  Millennium Cat
    Model
      Hair
    hip

YOU SHOULD NOW HAVE
TWO SHADERS OPEN:
OUR NEW HAIR SHADER
AND THE CAT'S PAINTED
SKIN TEXTURE...

COPY/PASTE THE
IMAGE MAP FROM THE
CAT'S COLOR CHANNEL
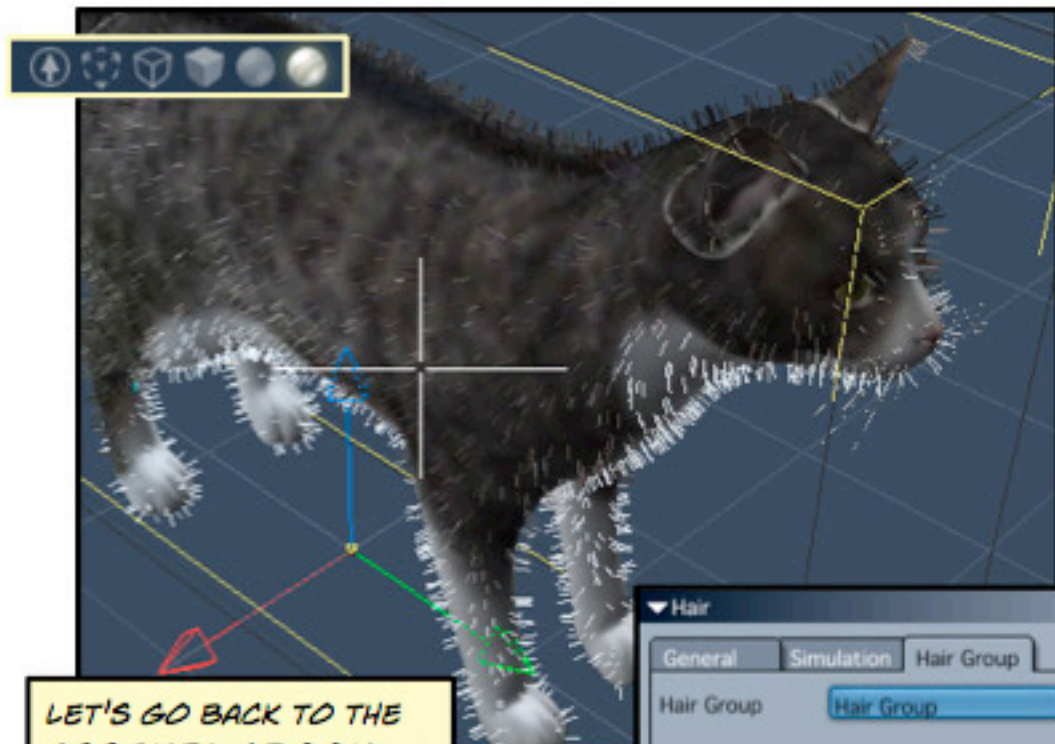TO OUR HAIR SHADER'S
COLOR CHANNEL...

REMEMBER THE HAIR SHADER USES
TWO COLOR CHANNELS. COPY THE
IMAGE MAP INTO BOTH THE ROOT
AND TIP COLOR CHANNELS!

TIP:
HIGHLIGHTS CHANGE THE HAIR
COLOR, BUT WE WANT TO
MATCH OUR HAIR EXACTLY TO
THE CAT'S SKIN TEXTURE!
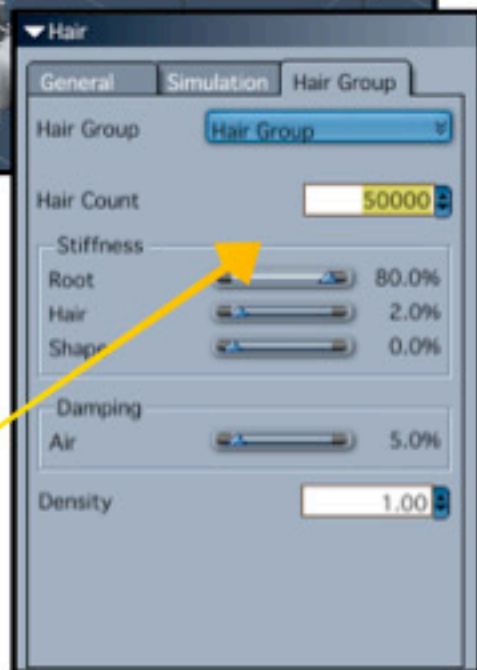
TURN OFF HAIR HIGHLIGHTS BY
SETTING THE VALUE TO ZERO.

LET'S GO BACK TO THE **ASSEMBLY ROOM** TO SEE HOW HE LOOKS...

OBVIOUSLY THERE ARE NOT ENOUGH HAIRS, SO BEFORE WE RENDER, LET'S BOOST THE **HAIR COUNT** UP TO

50,000!

HOW MANY HAIRS DOES A REAL CAT HAVE...?

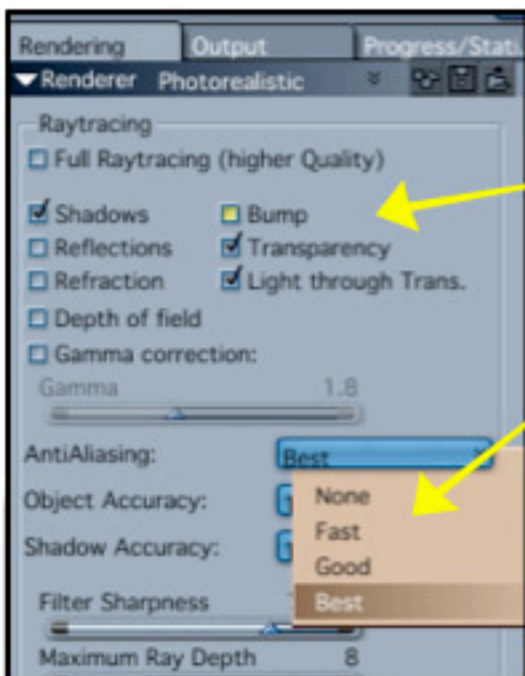OK, LET'S DO A TEST RENDER!

STEP 4:
TEST
RENDER

WELL..., IT'S A CAT WITH SOME FUZZ...
DON'T WORRY, WE CAN DO BETTER!

BUT FIRST, LET'S GO BACK TO THE
ASSEMBLY ROOM AND CHANGE
THE BACKGROUND SO OUR CAT
WILL BE EASIER TO SEE...

IN THE **INSTANCES TAB** SELECT
SCENE. UNDER THE **EFFECTS
TAB** SELECT **BACKGROUND** AND
CHANGE THE COLOR TO WHITE.

IN THE **RENDER ROOM** TURN OFF ANY RAYTRACING FUNCTIONS THAT AREN'T BEING USED. THIS WILL SAVE TIME...

SET **ANTIALIASING** TO BEST. SET **OBJECT ACCURACY** AND **SHADOW ACCURACY** TO 1.

OK, LET'S RENDER AGAIN!

HEY, HE DOES NOT LOOK TOO BAD...
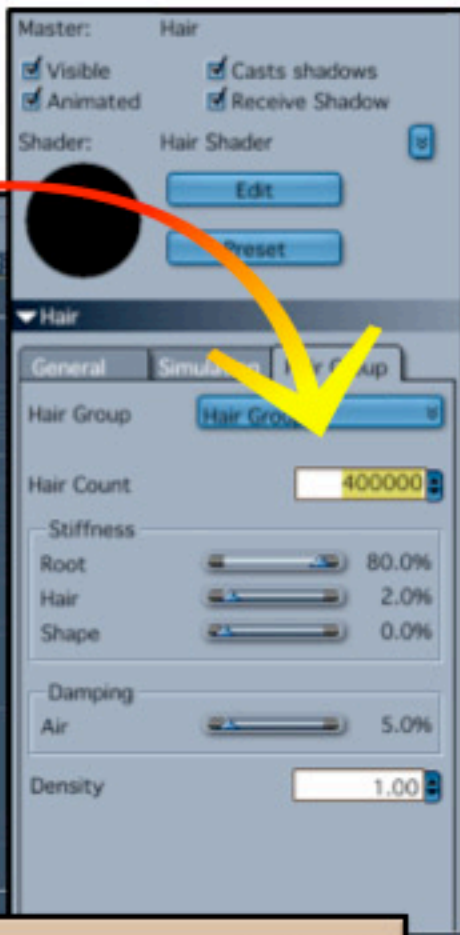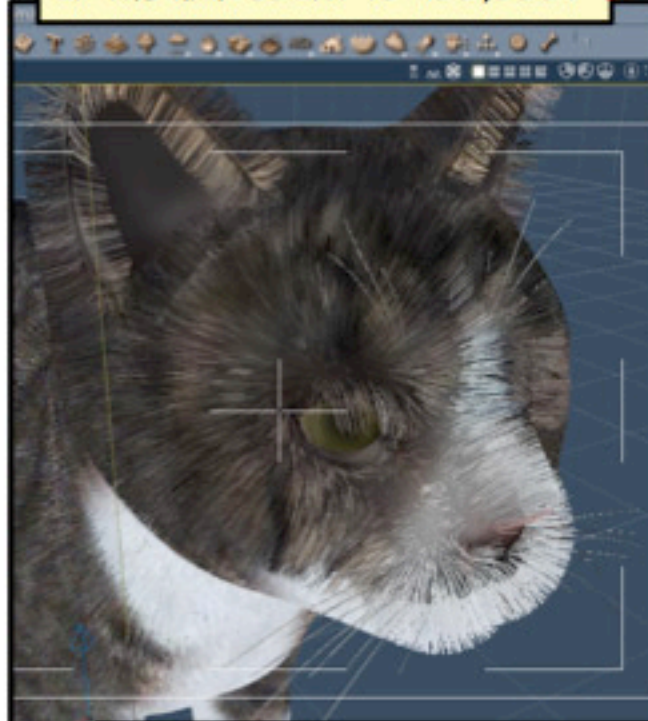
...FROM FAR AWAY...

BUT UP CLOSE... OH NO. HE NEEDS MORE HAIRS...

A LOT MORE HAIRS!
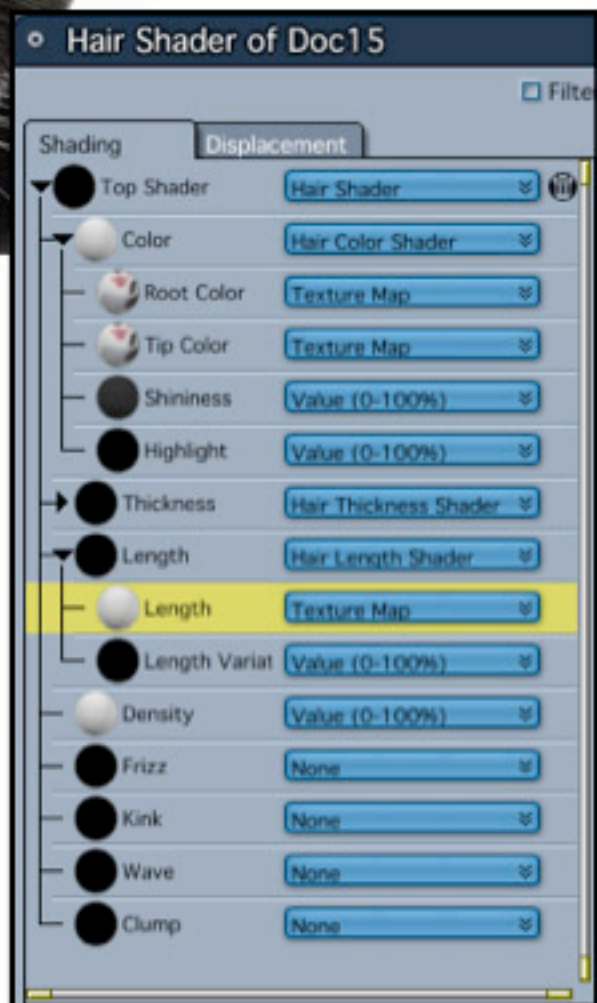
ALL THAT WORK AND THE
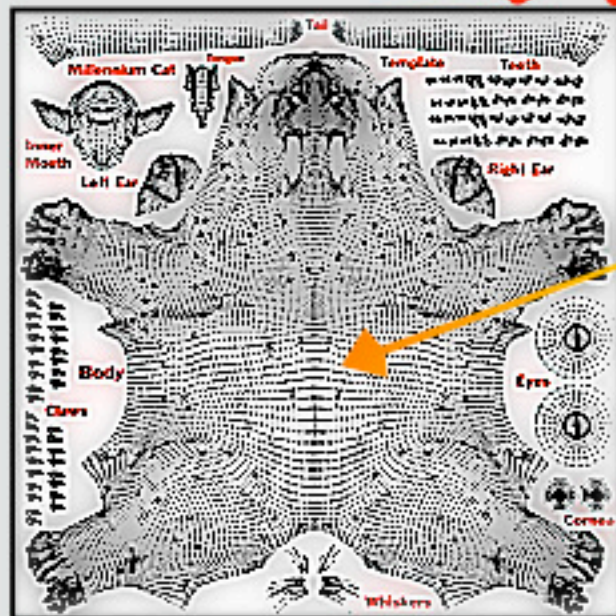BEST WE HAVE IS AN ANGRY-
LOOKING **SOCK PUPPET!**

WE NEED TO GET THE HAIR
SHORTER ON HIS FACE AND
NOSE, WITHOUT CHANGING
THE **LENGTH** OF THE REST.

IT REQUIRES A CUSTOM
HAIR-LENGTH MAP!

WE CAN MAKE ONE IN
A PAINT PROGRAM LIKE
PHOTOSHOP OR **GIMP.**
(*HAIR-LENGTH.JPG PROVIDED
WITH THIS TUTORIAL)

Hair Shader of Doc15

☐ Filte

Shading	Displacement
▼ ● Top Shader	Hair Shader
▼ ● Color	Hair Color Shader
─ ● Root Color	Texture Map
─ ● Tip Color	Texture Map
─ ● Shininess	Value (0-100%)
─ ● Highlight	Value (0-100%)
► ● Thickness	Hair Thickness Shader
▼ ● Length	Hair Length Shader
─ ○ Length	Texture Map
─ ● Length Variat	Value (0-100%)
─ ○ Density	Value (0-100%)
─ ● Frizz	None
─ ● Kink	None
─ ● Wave	None
─ ● Clump	None

PAINT A HAIR-LENGTH MAP

DOWNLOAD THE TEMPLATE FOR THE MILLENNIUM CAT FROM DAZ3D.COM

A GREYSCALE IMAGE MAP CAN TELL CARRARA IF HAIR SHOULD BE FULL-LENGTH (WHITE = 100%), OR IF HAIR SHOULD BE COMPLETELY SHAVED (BLACK = 0%).
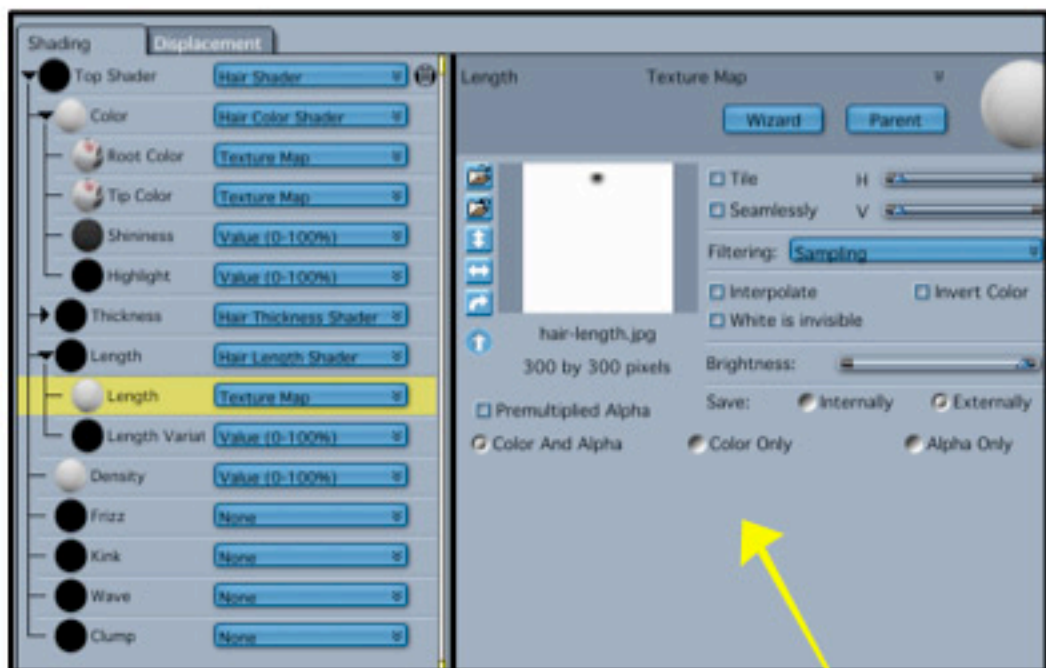
WE CAN CREATE ANY GROOMING EFFECT USING SMOOTH GRADIENTS-- EVEN A GRID, STRIPES OR A SHAVED CHECKERBOARD PATTERN!

FOR NOW, WE JUST WANT THE HAIR ON THE CAT'S FACE TO BE SHORTER.

I PAINTED THIS GRADIENT IN PHOTOSHOP IN LESS THAN A MINUTE. YOU CAN PROBABLY DO BETTER...

THE MAP ONLY CONTROLS HAIR-LENGTH SO IT DOES NOT NEED TO BE HIGH RESOLUTION. MINE IS ONLY 300 PIXELS SQUARE.

#HAIR-LENGTH.JPG

APPLY THE **HAIR-LENGTH** MAP TO THE **LENGTH** CHANNEL...
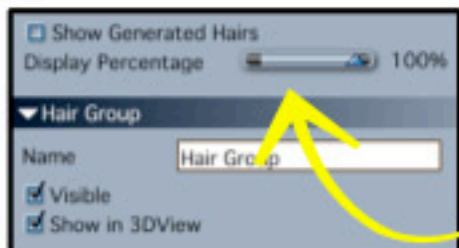CREATE A LITTLE **RANDOMNESS** IN OUR HAIR SHADER
BY SETTING THE **LENGTH VARIATION** TO 20%

BEFORE...

AFTER.

IF THIS WAS A **WILD ANIMAL** WE COULD PROBABLY STOP NOW....
THERE ARE ENOUGH HAIRS TO LOOK CONVINCING -- HE EVEN SEEMS A
LITTLE **DERANGED**.... BUT NO DOMESTIC HOUSE CAT WOULD EVER
BE CAUGHT LOOKING SO SHABBY!

BESIDES, REAL HAIR AND FUR GROWS IN A **WHIRL** PATTERN -- IT
DOESN'T STICK STRAIGHT OUT OF THE SKIN! WE ARE GOING TO USE
THE **BRUSH** TOOL TO ADD A LITTLE MORE REALISM TO OUR FUR.

RETURN TO THE **HAIR ROOM!** THE LAST STEP IS THE MOST
IMPORTANT, AND THE SLOWEST! BUT ONCE YOU LEARN THE **BRUSH
TOOL** YOU CAN CREATE HAIR STYLES AND WIND-BLOWN LOOKS ON
ANY MODEL. YOU WILL BE THE MASTER OF CARRARA'S HAIR SYSTEM!

Show Generated Hairs
Display Percentage   100%

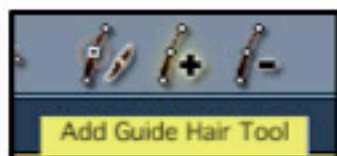Hair Group

Name   Hair Group
Visible
Show in 3DView

BACK IN THE HAIR ROOM, TURN OFF **SHOW GENERATED HAIRS**. YOU CAN ALSO CHOOSE TO DISPLAY A SMALL PERCENTAGE OF THE HAIRS TO SPEED WORKING TIME.

YOU WILL NOTICE THERE ARE NOT VERY MANY **GUIDE HAIRS**.

WE'LL NEED **MORE** TO CONTROL THE HAIR ON HIS FACE.
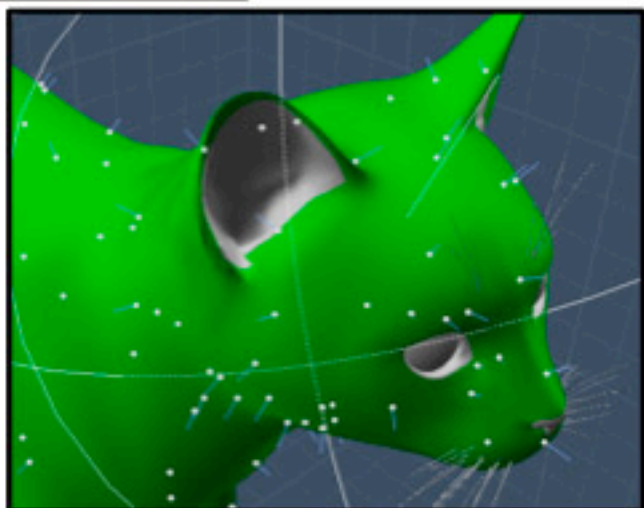
FORTUNATELY THERE IS A TOOL JUST FOR ADDING GUIDE HAIRS.
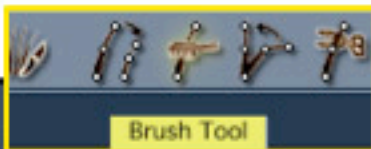
Add Guide Hair Tool

ADD GUIDE HAIR TIPS:

ROLL OVER THE MESH. YOU WILL SEE A LINE STICKING OUT WHERE A GUIDE HAIR WILL BE ADDED...

CLICK AND DRAG TO ADD GUIDES OVER AN AREA...
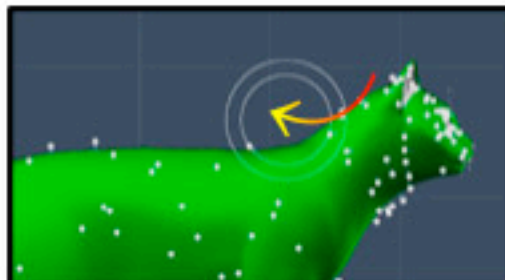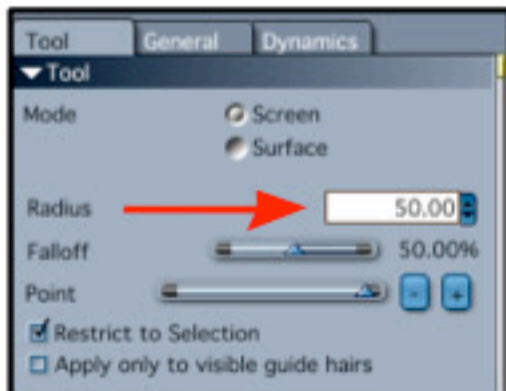
ADD PLENTY AROUND THE EYES AND MUZZLE.
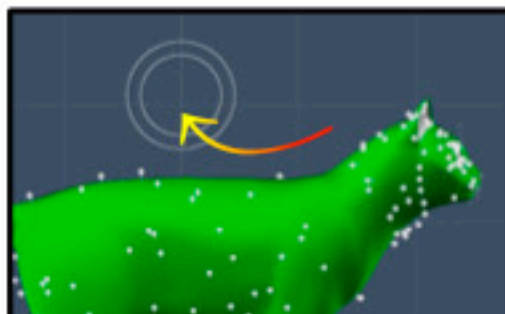
SELECT THE **BRUSH TOOL!**

Brush Tool

TURN THE CAT SIDEWAYS OR SELECT THE LEFT VIEW

CLICK AND DRAG THE BRUSH WITH LONG STROKES, IN THE DIRECTION THE FUR SHOULD GROW.

RELEASE THE MOUSE AND START ANOTHER STROKE. IT'S LIKE PETTING THE CAT!

Tool	General	Dynamics

▼ Tool

Mode   ◉ Screen
              ○ Surface

Radius   50.00
Falloff   ▭━━━▭ 50.00%
Point   ▭━━━▭   − +
☑ Restrict to Selection
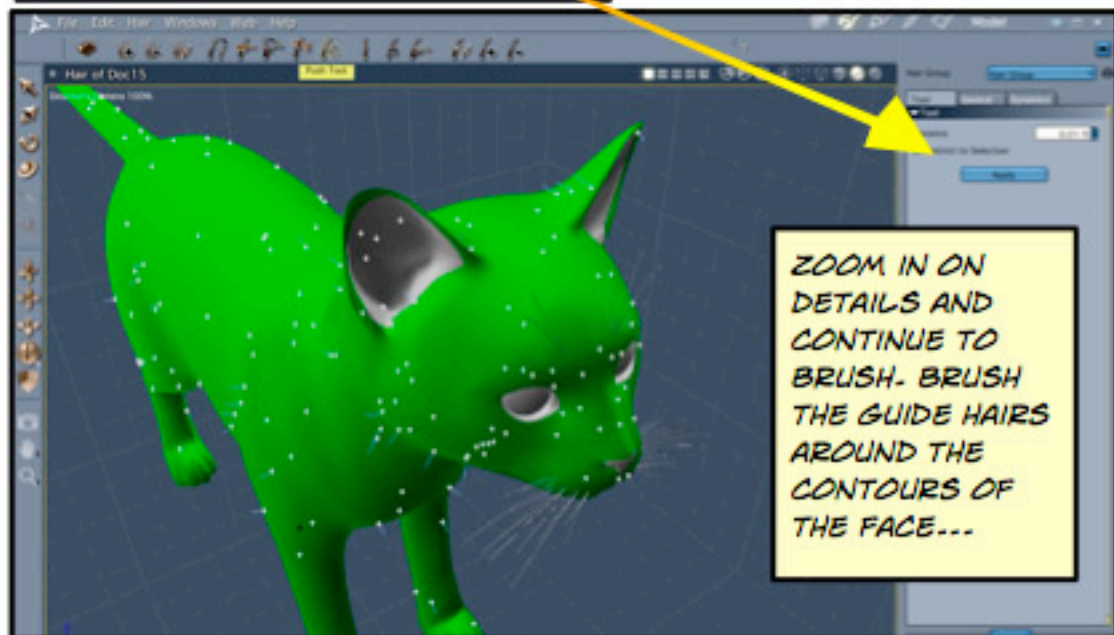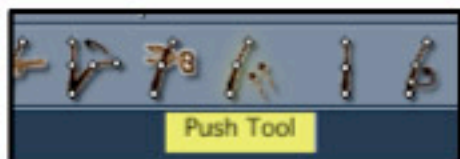☐ Apply only to visible guide hairs

THE BRUSH TOOL IS VERY POWERFUL ONCE YOU GET THE HANG OF IT. UNDER THE TOOL TAB SELECT A BIG RADIUS TO BRUSH LARGE AREAS. A HIGH FALLOFF GIVES GENTLE CONTROL.
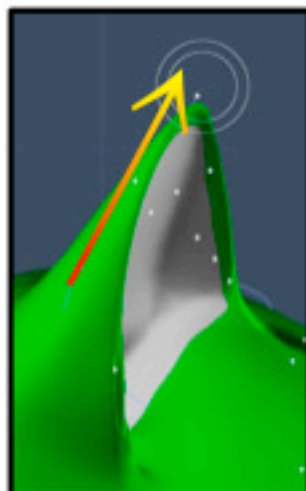
DON'T BRUSH TOO HARD!
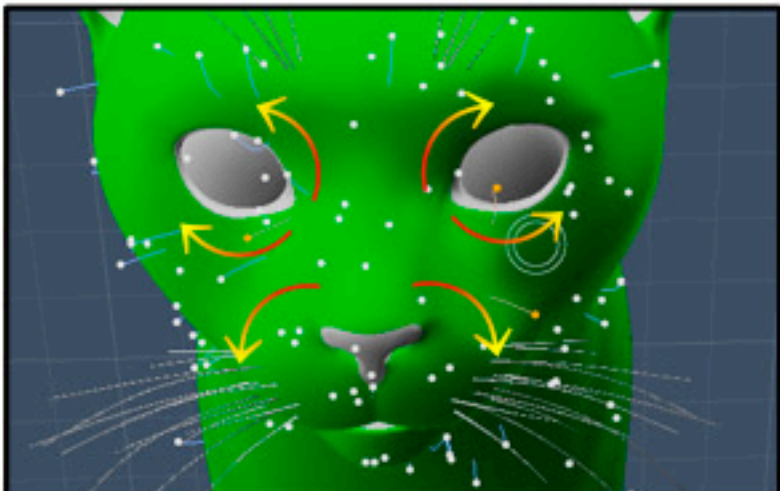WE JUST WANT THE HAIRS TO BE TRAINED IN A DIRECTION, NOT AS IF THE CAT ESCAPED FROM A WIND TUNNEL!

AFTER BRUSHING, YOU WILL NOTICE SOME OF THE GUIDE HAIRS HAVE BEEN PUSHED INSIDE THE MODEL. SELECT THE *PUSH TOOL* AND HIT THE *APPLY* BUTTON

Push Tool

ZOOM IN ON DETAILS AND CONTINUE TO BRUSH. BRUSH THE GUIDE HAIRS AROUND THE CONTOURS OF THE FACE...

BRUSH THE TIPS OF THE EARS...

THE NOSE..., AND THE EYES... SELECT SINGLE GUIDE HAIRS FOR PRECISE CONTROL.

AND RENDER AGAIN...

STARTING TO LOOK GOOD, BUT WE NEED MORE GUIDE HAIRS AT THE MOUTH WHERE HAIRS ARE STILL FALLING INSIDE THE MESH...

REMEMBER GUIDE HAIRS ARE NOT EXACT! HAIR POSITION AND DIRECTION ARE **INTERPOLATED** BETWEEN GUIDES... ADD **MORE** GUIDES TO PROBLEM AREAS AND BRUSH THEM IN THE RIGHT DIRECTION.
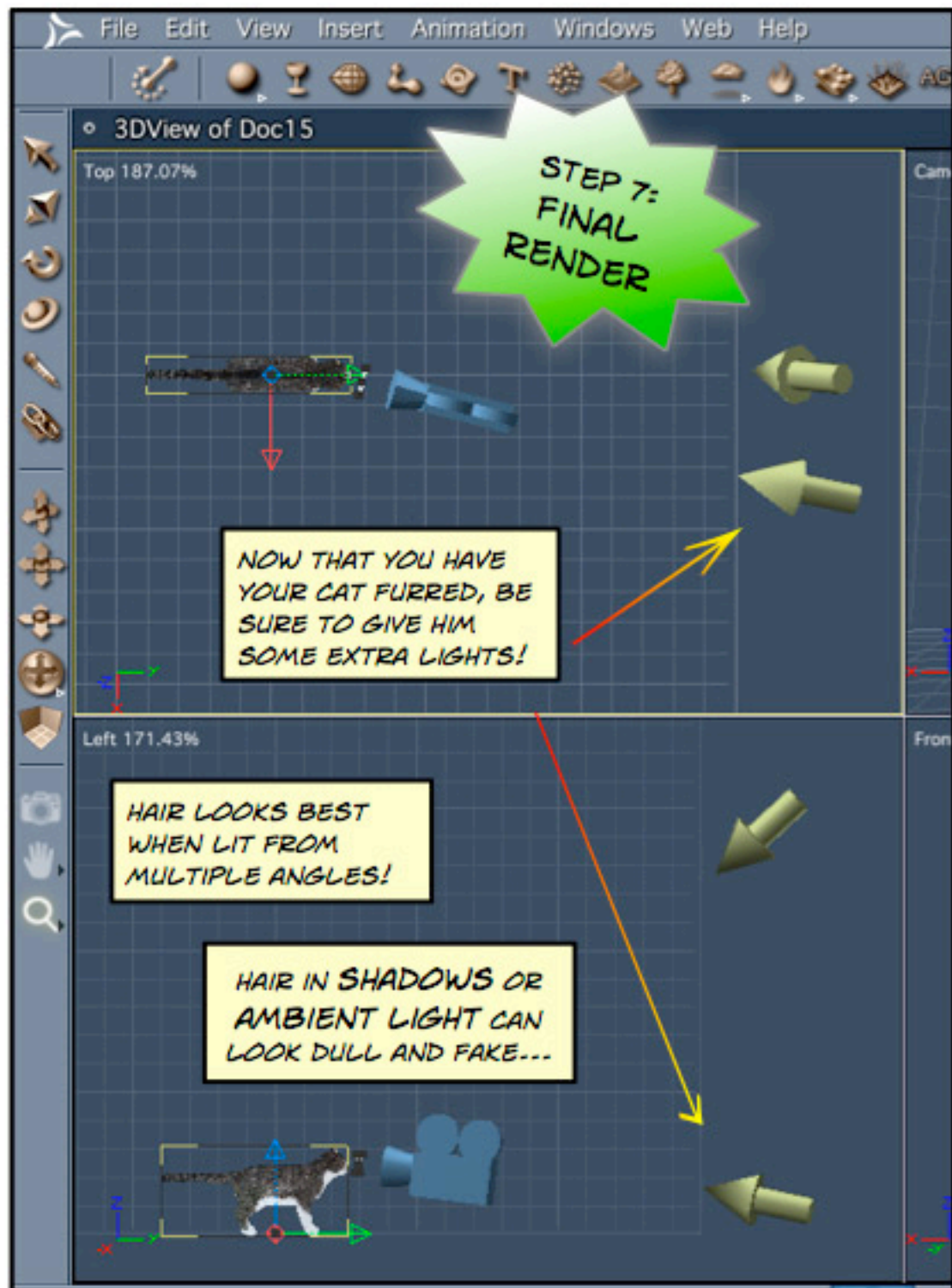
ADD MORE GUIDES AND BRUSH AGAIN!

TIPS:
GUIDE HAIRS ARE THE SAME LENGTH, BUT A **HAIR-LENGTH MAP** CUTS HAIR SHORTER.

TRY TO GET EACH GUIDE TO **CURVE** A LITTLE...

MORE **FALLOFF** IN THE **BRUSH TOOL** GIVES A GENTLE TOUCH...

GUIDE HAIRS FOLLOW THE MESH SHAPE, BUT ALSO FLUFF-OUT AWAY FROM THE MODEL.

USE THE **PUSH TOOL!**

POSE AND RENDER!

LAST MINUTE ADJUSTMENTS TO THE HAIR SETTINGS: USE **SCALING** TO GET FINER, THINNER HAIRS. SET THE **RENDER QUALITY** TO 500.

Hair

General	Simulation	Hair Group

Length   0.06 ft

Thickness   Medium

Scaling   1.00

Rendering Quality   500

☑ Show And Calculate Generated Hairs
Display Percentage   100%

☐ Show Guide Hairs

END