

Legend Notes

This is a graphical representation of a possible extension of the OME data model developed by members of the Imaging Working Group of the Units are omitted for simplicity sake. 4D Nucleome consortium. The graph utilizes the Entity-Relationship formalism. In this formalism information about a real world situation/thing APE, Abstract Parent Entity

(in our case a Microscope and an image acquired using that instrument) are represented by three types of model elements:

1) Entities = Boxes; 2) Relationships = lines connecting boxes; 3) Attributes = fields within boxes

When describing a real life situation/thing:

1)ENTITIES corresponds to NOUNS = the things we want to collect information about.

2) RELATIONSHIPS corresponds to VERBS = actions/state/occurrence that connect Entities with each other 3) ATTRIBUTES corresponds to ADJECTIVES = the actual information about each Entity we want to collect

In order to read the schema please start from INSTRUMENT and from and IMAGE for the Specifications and Settings section respectively. Then follow the lines to the connected boxes and think something like: 1) An Instrument has a Microscope_Body, might rest on a Microscope_Table, and has a Light_Source etc.; 2) An Image was

For questions or comments please contact: caterina.strambio@umassmed.edu produced as part of a specific Experiment, was collected in a specific Imaging_Environment, was collected using specific Microscope_Settings etc. IMAGE ACQUISITION Settings **ImagingEnvironment** AirPressure CO2Percent MicroscopeSettings ID (MicroscopelD) FieldOfView **OptovarMagnification TotalEffectiveMagnification TIRFSettings** Description ThroughLens _ — — — — — A description for the TIRFsettings [plain-text multi-line string] Geometry AnnotationRef ObjectiveSettings ID (ObjectiveID CorrectionCollar MeasuredRefractiveIndex ightSourceCouplingR Temperature SamplePosition ID (CouplingID) Planes Description FilterSetRef SamplePositionX SamplePositionY -O+ A description for the Microbeam SamplePositionZ Plane ID (FilterSetID) Manipulation AdditionalLensRef SampleHolderRef [plain-text multi-line string] ID (LensID) StageFocalPosition Plane LightSourceSettings ExcitationFilterRef MicrobeamManipulation ID (LightSourceID) ID (FilterID) PrismRef Name Attenuation Wavelenght Has Timestamp FocusingRef ID (PrismID) WavelengthUnit ExperimenterRef AutoFocusRef And ExposureTime OutputPower DichroicRef ROIRef HashSHA1 PowerAtSample AnnotationRef ID (MirrorID) ${f Polarization Optics Ref}$ LightSourceSettings ID (PolarizationOpticsID) Image EmissionFilterRef Description ID (LightSourceID) Attenuation AdditionalFilterRef ID (FilterID) A description for the experiment [plain-text multi-line string] Channels WavelengthUnit ExperimenterRef ID (FilterID) ExperimentGroupRef OutputPower PowerAtSample ExperimentRef AdditionalOptics Channel InstrumentRef ${\sf AdditionalMirrorRef}$ Experiment MicroBeamManipulationRef Channel ID (MirrorID) AnotationRef Channel ActualMountedAngle Type Pint San ID AnnotationRef LabellingMethod Acq IIIu Name Children Entities (choose on Con Pin SamplesPerPixel PhysicalSizeX Exc Acd IlluminationType PhysicalSizeY DetectorSettings-APE Emi Cor PinholeSize hysicalSizeZ CameraSettings Flud Exc AcquistionMode melncrement ID (DetectorID) NDI Emi ContrastMethod Sample EffectiveOffset Poc Flue ExcitationWavelenght Integration AnalogToDigitalConverter Col ND EmissionWavelength CameraFieldOfView Poc Fluorophore ReadoutRate Col NDFilter FrameRate MountingMedium PockelCellSetting MountingMediumRefractiveIndex OperatingTemperature AnnotationRef AnnotationRef L _ (AnnotationID) Description PhotoMultiplierSetting **Image Data** A description for the annotation. PMTGain Calibration [plain-text multi-line string] PMTVoltage | EffectiveZoom TiffData AnnotationRef Description TiffData LightPowerAtMicroscope ID (AnnotationID) IlluminationIntensity TiffData DarkValue CommentAnnotation | PhotometricConversion ReadNoise Value TestTubeSettings_1 UUI Firs FirstZ TestTubeSettings_2 Plar FirstT Namespace TestTubeSettings_3 Annotator (ExperimenterID) UUI FirstC ImagingStandard AnnotationRef PlaneCount UUID FlatFieldImageRef ID (ImageID) DetectorDarkMap DetectorReadMap Multi-ColorBeads Manufacturer ColorBeadsImageRef SerialNumber LotNumber SpecsFile ID (ImageID) Name **PSFJReport** Type