QLF™ System

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● QLF™とは:

QLF™は特定波長（405nm）の青色可視光線（通称 Q-ray™）の照射で励起される緑色および赤色蛍光を可視化する最新技術です。この技術を応用して開発された一連の装置が QLF™システムで、予防歯科や口腔ケアでターゲットとなる初期齲蝕やプラークおよび歯石、舌苔を映像化します。専用ソフトウエアにより、この蛍光画像と定量的な解析結果がモニターに表示されますので、口腔内のリスク状態の評価やモニタリングが可能となります。また、解析結果の提示・説明によりクライエントとのコミュニケーションとインフォームド・コンセントが充実します。

● 現行製品ラインナップ

プロトタイプの a. QLF-D Biluminator™の製造中止にともない、現在、b - g の6機種が利用可能です。

a. QLF-D Biluminator™（2022年に製造中止となり Qraycam にアップグレード）
b. Qraycam classic™ （Q-ray 光源搭載口腔カメラ・専用アプリの臨床用セットで画像の記録・解析が可能）
c. Qraycam Pro™ （Q-ray 光源搭載口腔カメラ・専用アプリの臨床用セットで画像の記録・解析が可能）
d. Qraypen classic/C™ （Q-ray 光源搭載ペンカメラで画像の記録・解析が可能）
e. Qrayview dual™（Q-ray 照射器・ゴーグルのセットで簡易型視覚評価装置）
f. Qscan Pro™（Q-ray 照射器と蛍光フィルターを複合した家庭での自己観察用 QLF™装置）
g. 研究用 QLF™システム（Q-ray 光源搭載デジタルカメラ・QLF™解析アプリ・専用スタンドの研究用セット）

● QLF™の原理

405nm の青紫色可視光線（Qray™)を健全歯に照射すると、緑色蛍光が均一に励起され、QLF™フィルターを通して画像としては白色領域として可視化される（a）。一方、歯面に初期う蝕があると、その部位は蛍光が散乱により減弱し、暗部（茶褐色）として観察される(b)。細菌由来の赤色蛍光は、エナメル質表層下の感染歯質では輪郭が滲んだ赤色部として（c）、また歯面あるいは舌の表層に露出しているバイオフィルムでは輪郭が明瞭な赤色領域(d)として視覚化される。詳しくはサンプル画像をご参照ください。

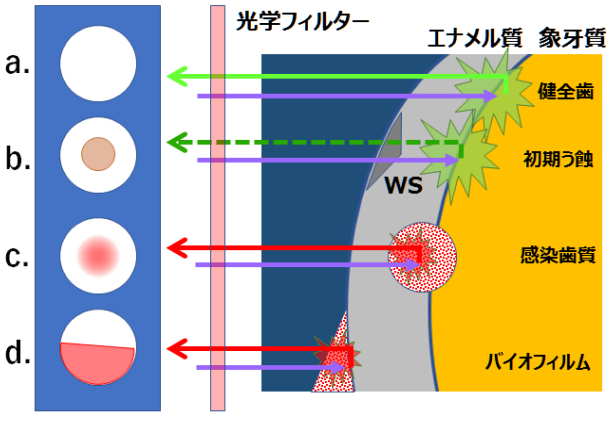
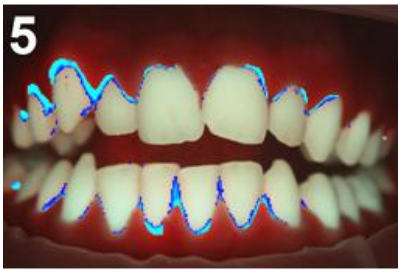


図 1 QLF の原理（模式図）

● **QLF™ 症例画像**

図 2 口腔内写真（白色 LED）

QLF™画像（プラーク・歯石）



プラークスコア解析結果

図 3 Q-ray™画像（PMTC 前）

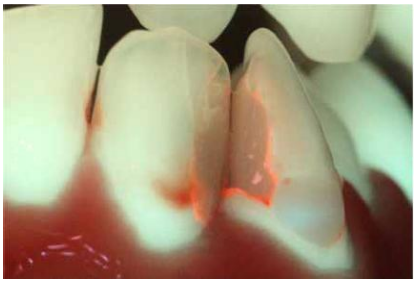
QLF™画像（PMTC 後）

図 4 口腔内写真（白色 LED）

QLF™画像（初期齲蝕）

図 5 QLF™システムによる初期齲蝕の活動性解析（脱灰深度マッピング）

図 6 口腔内写真（白色 LED）



QLF™画像（CR 辺縁の封鎖不良・漏洩）

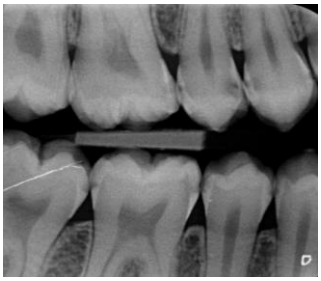
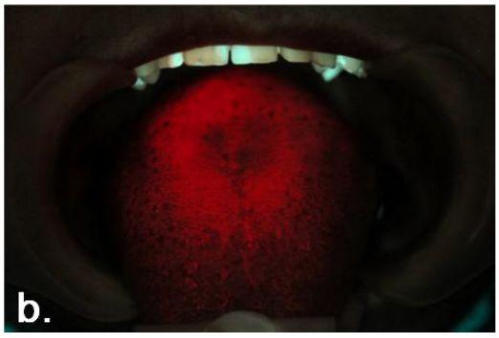


図 7　口腔内写真（白色 LED）　　QLF™画像（隣接面齲蝕）　　X 線写真



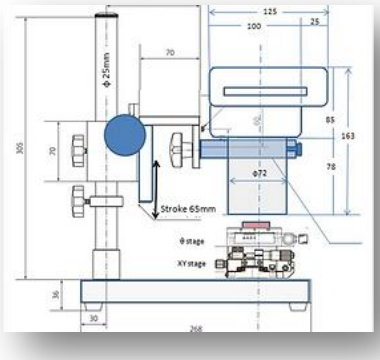


図 8　口腔内写真（白色 LED）　　舌苔の QLF™画像

QLF™関連情報

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