KFBIO
technology for health.

KONFOONG BIOINFORMATION TECH CO.,LTD

# More Than Precise

KFBIO
technology for health.

**20 years research** and development

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# Easy Operation
# High-accuracy Imaging

20 years of technical upgrade experience helps develop the latest series of the best quality KFBIO products. KF-PRO series digital pathology slide scanners have excellent performances in its movement precision, focus precision and image processing precision. High-accuracy WSI meets the needs of traditional slide viewing method, and the high-precision demands of AI-assisted image analysis.

As the first batch of Chinese digital pathology slide scanners, KF-PRO series have been installed in more than **2000 hospitals** and labs, and scanned more than **50 million** slides.

**Application Scenarios: Telepathology, AI analysis, pathology department**

**View Samples**

| HE | TCT | ISH/FISH | IHC |

# Five Functions

## 3 Colors Independent Process

K-SCP color processing helps reproduce the original color, color saturation, color temperature, color contrast and color compensation of different monitors. High-accuracy Imaging and high-accuracy color representation make every slide trustworthy.

## 6 Different Capacity

KF-PRO series digital pathology scanners of 1~400 slides meet different needs of different workload. They support different scanning modes of different kinds of slides. Software are self-developed and equipped for digital slides storage and management, telepathology and scientific research.

## 25s High-speed Scanning

It only takes 25s to scan a 15mm*15mm area at 20x magnification. It's quite suitable for rapid frozen section consultation, high-throughput scanning and real-time AI data acquirement.

## 20nm Precise Control

KF-PRO series digital pathology scanners adopt line scanning technology and grating ruler position method to realize high-precision movement control at nanometer level. It makes every sample process quickly and accurately and realizes more stable imaging.

## 80x Magnification

It uses top optical configuration to improve the light source, objective lens, cameras, optical path, etc. It greatly improves resolution. The structure and details of cells are clearly visible. The edge of cells is sharp and the cell structure is clear.

# High-quality model for clinic and scientific research



## KF-PRO-005-EX

### High Speed
**25s** scanning (15mm*15mm,20x), rapid **frozen section** diagnosis, over **200,000 cases**

### Z-stack Scanning
Support **Z-stack** scanning to fuse a high-quality slide, support single layer viewing

### Cloud Configuration
Provide free cloud for storage and one-click sharing

### Support Different Slides
Support **precise scanning** of light color staining, uneven thickness, small tissue slides

### Support Different Sizes
1*3 inch, **2*3 inch, 6*8 inch**, automatic recognize tray model to adjust parameter

### • Application Scenarios •

Rapid remote frozen section diagnosis, complex cases, multi-discipline consultation, applied in top hospitals, medical institutions, laboratories

Precise scanning for scientific research data collection, new drug development

Digitize and archive high-quality slides for slide bank construction, education resources, important cases archive

Customized AI-assisted scanning to preprocess the slide images

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# AI-assisted Analysis High-matched Model



## KF-PRO-020-HI

### Batch Loading
Support **tray loading** and **slide box loading**

### High Stability
Electric condenser, strong light source and **high-sensitive camera** ensure excellent scanning performance

### High Flexibility
Support small and large batch scanning for remote consultation

### AI-enhanced Imaging
Slides recognition improvement, color contrast of cell nucleus enhancement, image recognition accuracy improvement

### Multi-site Management
Central archive management for different working scenarios and centralized AI analysis

### • Application Scenarios •

Batch AI-assisted diagnosis

Telepathology consultation, multi-discipline consultation, complex cases archive

Data analysis and academic exchange

Scientific research data archive and management

# High stable model for clinic, education and research

**KF-PRO-040-HI**

### High Speed
15mm*15mm, 20x, 25s only

### Stable Scanning
Magnetic suspension motor drive
99.85% slides scanned successfully

### High Fidelity
High resolution 0.5 um/pixel (20X),
0.25um/pixel (40X)  WSI scanning

### Top Accessories
OLYMPUS top objective lens
CHROMA narrow band filter

### High Precision
50nm positioning accuracy
Support 80x magnification

### Professional Services
Customize products quickly
Provide in-time support

● **Application Scenarios** ●

Daily use for pathology labs and hospitals

Remote sharing and consultation for scientific research

Efficient slide management, archiving and storage

Customized AI algorithm to assist diagnosis

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# High-throughput model for large hospitals and labs

**KF-PRO-120-HI**

### High Speed
15mm*15mm, 20x, 25s only

### Stable Scanning
Magnetic suspension motor drive
99.85% slides scanned successfully

### High Fidelity
High resolution 0.5 um/pixel (20X),
0.25um/pixel (40X)  WSI scanning

### High Compatibility
Support bright-field and fluorescence
Support different image format

### Intelligent Scanning
Automatic one-click scanning
Customized AI algorithm

### Professional Services
Customize products quickly
Provide in-time support

● **Application Scenarios** ●

Large throughput for pathology labs and hospitals

Remote sharing and consultation for scientific research

Efficient slide management, archiving and storage

Customized AI algorithm to assist diagnosis

# Full Digital Pathology Labs **Basic Model**

**KFBIO**

## KF-PRO-400-HI

### Full Automatic
One-click scanning, read slide bar code **automatically**, upload **classified slides** to storage server

### High Stability
**Record**: Scan 4600 continuously without errors

### Intelligent Scanning Mode Switch
**Switch** scanning parameter and mode **automatically** for different slides

### Automatic Image Quality Grade
Grade image quality **automatically** before archiving

### Slide Protection Programme
**Push out or skip** the nonstandard slides **automatically** to avoid getting stuck

### Big Data Efficient Management
Centralized data storage, efficient classification management, bind to patient information automatically, graded **storage**
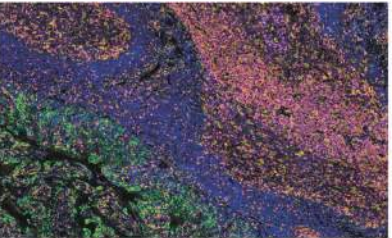
## • Application Scenarios •

Full digital pathology department construction

Large batch AI-assisted scanning, sub-specialty AI analysis systems

Artificial Intelligence data collection and annotation

Bid data scan and storage, large data bank construction

Various digital applications in experiment platform

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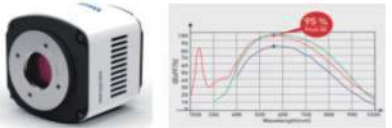# Fluorescence Scanning Upgrade Choice

### Support Whole Series
KF-PRO series can be upgraded to equip fluorescence channels. Fluorescence scanning speed: 8 slides/h (3 channels). 2*2 px image fusion function, high sensitivity. Short exposure time realizes weak light detection to protect sample.

Latest 1.2 inch matrix CMOS chip. Target surface size: 6.5 um. Higher quantum efficiency.

### Support Bright-filed and Fluorescence
Support bright-filed and fluorescence scanning; Standard: 3 or 6 fluorescence channels. 10 channels at most.

Approved registration certificate for fluorescence scanner

### Top Filters
Quick filter switch, wide spectral region, excellent fluorescence imaging performance. Separate fluorescence channels efficiently. Large information density but high-quality data meanwhile.

### Top Fluorescence Camera
Active cooling sCMOS fluorescence camera. Low SNR. High resolution.

高对比度    高亮度
无串色    零漂移

### Several LED independent light sources to fit every fluorescence channel

## • Application Scenarios •

Multi-color immunofluorescence scanning

FISH scanning and analysis

Applied in scientific research: brain science, liver, stem cells, drug development

Cancer microenvironment analysis/ Spatial transcriptome analysis

# DIGITAL PATHOLOGY
# SLIDE SCANNER (FLUORESCENCE)

KF-PRO-FL SERIES

Capacity: 5/20/120/400 slides

Mode: Bright-field&fluorescence

Lightning: LED light source

Channel: 8 channels at most

Algorithm: Fluorescence AI analysis algorithm

▲ KF-PRO-FL-400

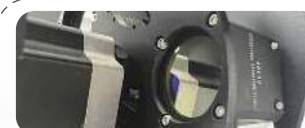▲ KF-PRO-FL-005        ▲ KF-PRO-FL-020        ▲ KF-PRO-FL-120

## Key Advantages

**Top Filter**
Minimum spectral band resolution reaches 10nm
The transmission rate reaches 99% and the cutoff rate reaches OD6

**Original Light Source Lighting Design**
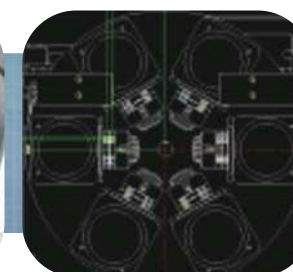Specific spectral band LED light source excitation
Prevent cross-color efficiently

**SCMOS Camera**
Active refrigeration SCMOS fluorescence camera
Low signal-to-noise ratio, high resolution

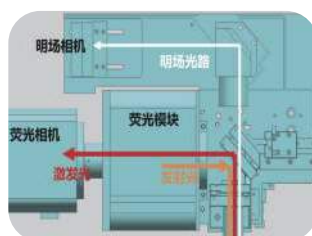**Original Preview Shooting Technique**
Automated identification of scan areas
Shorten scanning time

Independent LED light source avoids cross color. It features with its high contrast, high brightness, no drift and no cross color. It's more suitable for specific fluorescence channel.
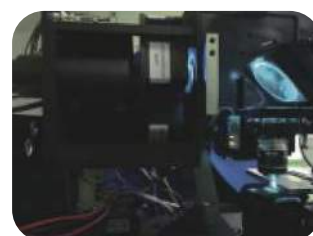
CHROMA narrowband filter is equipped. The minimum spectral band resolution reaches 10nm.

## Key Technical Advantages

**Flexible Configuration**
Support bright-field and fluorescence scanning
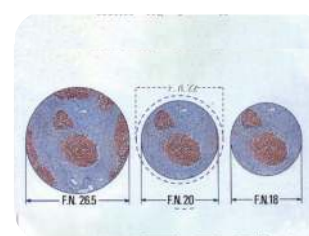Support different channel purchase

**Convenient Maintenance**
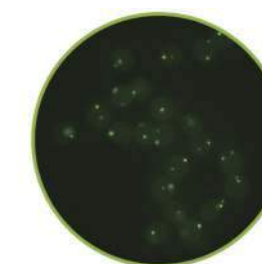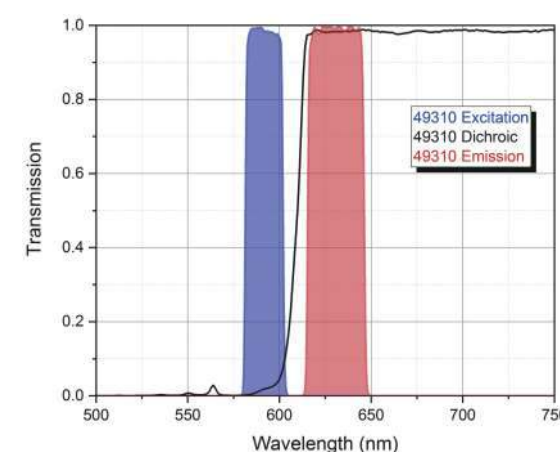Removable color filter
Easy to maintain

**Durable In Use**
LED light source
20000+ hours lifetime

**Large Field of View**
26.5mm field of view
Reduce shoot and exposure time

## 8 channels, 8 filters at most

49310 Excitation
49310 Dichroic
49310 Emission

Transmission / Wavelength (nm)

FISH filters
High contrast

General filters
Low contrast

# Choose a product that meets the needs of your lab

## Digital Pathology Slide Scanner Parameter

| Model | KF-PRO-005-EX | KF-PRO-020-HI | KF-PRO-040-HI | KF-PRO-120-HI | KF-PRO-400-HI |
|---|---|---|---|---|---|
| Capacity | 5 | 20 | 40 | 120 | 400 |
| Scanning Mode | Line Scanning | | | | |
| Scanning Speed | 25s (20X,15mm×15mm) 60s (40X,15mm×15mm) | | | | |
| Objective Lens | Plan achromatic objective 20X, NA 0.8; 40X, NA 0.95 | | | | |
| Resolution | ≤ 0.5μm/pixel (20X) ≤ 0.25μm/pixel (40X) | | | | |
| Position Accuracy | 20nm | | | | |
| Z-stack | ✓ | ✓ | ✓ | ✓ | ✓ |
| AI Recognition | ✓ | ✓ | ✓ | ✓ | ✓ |
| Fluorescence Upgrade | ✓ | ✓ | ✓ | ✓ | ✓ |
| Image Format | KFB/TIFF/SVS | | | | |
| Movement Mechanism | Magnetic suspension drive, no noise, no abrasion | | | | |

## Fluorescence Model Parameter

| Acceptable Slides | Digital 5 Slides Scanner: 1*3inch, 2*3inch, 6*8inch, standard bright-field and fluorescence slides; Other models: 1*3inch, standard bright-field and fluorescence slides | | | |
|---|---|---|---|---|
| | 6 channels to choose, CHROMA filter | | | |
| | Channel Name | EX | BS | EM |
| Fluorescence Channel | KF-DAPI | 350/50 | 400 | 460/50 |
| | KF-GREEN | 495/25 | 515 | 537/29 |
| | KF-ORANGE | 546/10 | 556 | 572/23 |
| | KF-RED | 580/25 | 600 | 625/30 |
| | KF-CY5 | 630/20 | 647 | 667/30 |
| | KF-CY7 | 710/75 | 760 | 810/90 |
| Fluorescence Scanning Speed | 3 channels exposure time: 50ms; 15mm*15mm scanning time: 8min 6 channels exposure time: 50ms; 15mm*15mm scanning time: 16min | | | |
| Fluorescence Area | Select an area manually, recognize marked area automatically | | | |
| Fluorescence Camera Parameter | Active cooling 1.2 inch target surface sCMOS fluorescence camera. | | | |
| Z-Stack | Support Z-stack and image fusion function | | | |

## Whole-slide Imaging Analysis System (for scientific research)

| Acceptable Slides | H&E, IHC, ISH, FISH, IF slides, etc; Oncology, neurosciences, metabology, transplantation, toxicological pathology; |
|---|---|
| Analysis Speed | 1.5cm*1.5cm WSI analysis, ≤1min |
| Module | Choose module according to needs |

# Team and Service

### About KFBIO

KFBIO has been devoted to digital pathology for ten years. KFBIO has developed a innovative end-to-end digital pathology solution including pathology slides scanning equipment, pathology routine equipment, telepathology platform, AI analysis systems, etc.

### Technical Strength

Chinese Thousand Talents Plan: 2 talents; Over 50% R%D staff; 267 patents, 95 invention patents

### Market Distribution

Strong agents network; Cover Asia, Europe, America, etc.

## Top Clients Over 2000 hospital clients

北京协和醫院 PEKING UNION MEDICAL COLLEGE HOSPITAL

四川大学 华西临床医学院/华西医院 West China School of Medicine/West China Hospital, Sichuan University

复旦大学附属中山医院

中山大学 附属第一医院 The First Affiliated Hospital, Sun Yat-sen University

北京大学第一医院 PEKING UNIVERSITY FIRST HOSPITAL

浙江大学医学院附属第一医院 浙江省第一医院 THE FIRST HOSPITAL OF ZHEJIANG PROVINCE

北京大学第三医院 Peking University Third Hospital

浙江大学医学院附属第二医院 The Second Affiliated Hospital Zhejiang University School of Medicine

复旦大学附属肿瘤医院 Fudan University Shanghai Cancer Center

中山大学 肿瘤防治中心 SYSUCC SINCE 1964 SUN YAT-SEN UNIVERSITY CANCER CENTER

郑州大学第一附属医院 The First Affiliated Hospital of Zhengzhou University

复旦大学附属妇产科医院 上海市红房子妇产科医院

浙江大学医学院附属 邵逸夫醫院

中山大学孙逸仙纪念医院 SUN YAT-SEN MEMORIAL HOSPITAL,SUN YAT-SEN UNIVERSITY

广东省医学科学院 广东省人民醫院 GUANGDONG ACADEMY OF MEDICAL SCIENCES GUANGDONG GENERAL HOSPITAL

**Technology partnership:** Intel, Nanjing University of Science and Technology, China Maternal and Child Health Association, Tokyo Institute of Technology

**Value-added Service**

- Free 50GB cloud space for storage
- Digital pathology quality control and training cources
- Online pathology slides sharing and discussion webinars
- Bright-field and fluorescence scanning for scientific research

# K-VIEWER
## Image Viewing Software

K-Viewer offers to browse and annotate the digital slides for the convenience of pathologists to diagnose the cases. It allows pathologists to quickly access slides or cases locally at the desktop or remotely, on a computer, smartphone or tablet device. K-Viewer gives customized viewing options for different customers to deliver optimal performance and suit the device you choose. Its intuitive interface and customized workflows provide a consistently excellent viewing experience.

## Real-time, Security, Stable

>>Real-time Slide Image Collection and Transmission

>>Safe, Stable and High Fidelity Data Transmission

>>Local PC and Mobile Phone Viewing Are Available

# Software Functions

>>Zoom, rotation and partial magnification

>>Real time view and mark multiple images synchronously

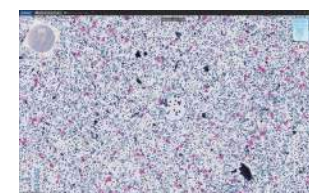>>Parameter definition of image comparison, color channel, auto-play etc

>>Marking tools of images and words, measure the marked areas automatically
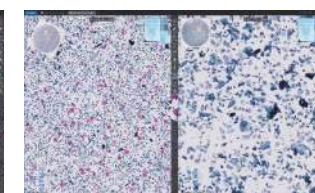
## Operating Modules
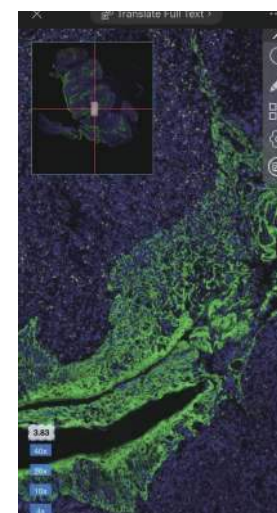### Local Image Viewing

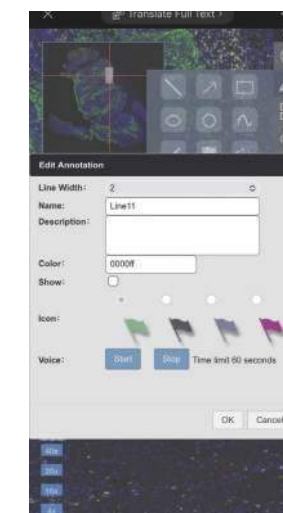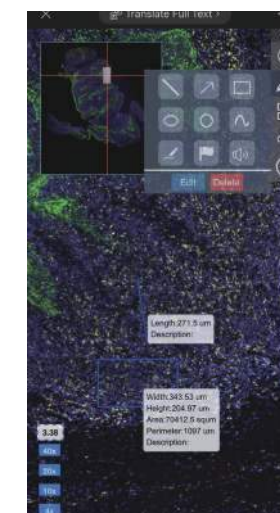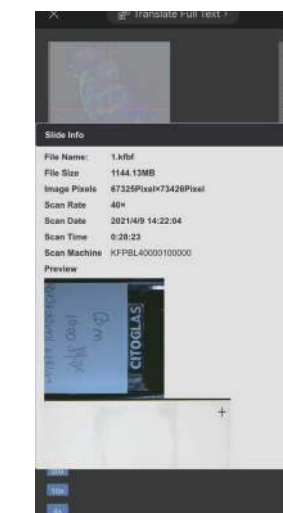| Mark and annotate | Partial zoom | Slide parameter adjustment | Synchronous viewing |

### Mobile Image Viewing

| Zoom in and out | Mark and annotate | Automatic measure | Slide information |

• **Application Scenarios** •

Telepathology for both classroom and online education

Flexible presenter role for students

Instant K-Viewer: an excellent viewer for remote slide viewing

# KFBIO Slide Management System

It makes it possible to manage a large number of digital slides within a short time. It allows pathologists to get access to slides immediately after being scanned so that slides can be shared or annotated remotely. It greatly reduces your workload to manage slides.

**Seamlessly connect with digital pathology slide scanner to provide the most comfortable experience for you.**

**>> Share**
  Use the link or QR code to share the digital slide to others

**>> Speed**
  Upload digital slides automatically or manually quickly

**>> Integration**
   Integrate with HIS and LIS for the convenience of slide sharing and management

**>> Convenient**
  Rapid retrieve, edit and annotate the digital slides

**>> Security**
  Privileged access management is properly applied in the system to secure the sensitive data.

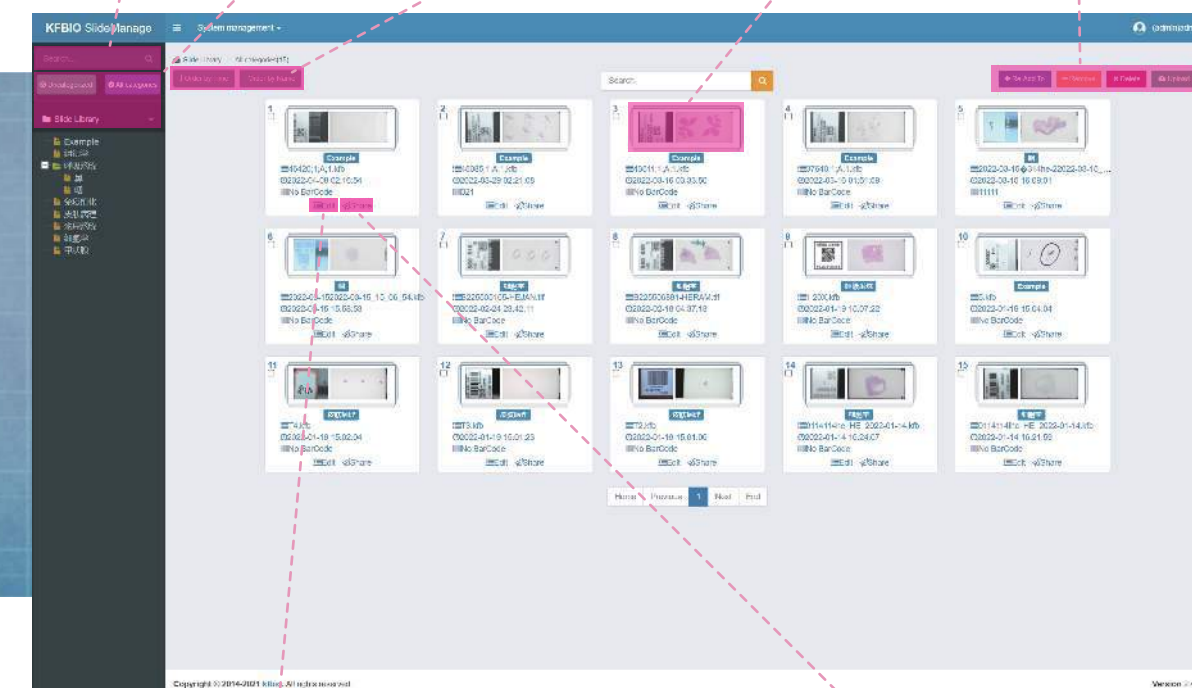# Manage your digital slides in the most convenient way

Search the digital slides you want quickly.

Classify different categories of digital slides for quick retrieval.

The digital slides can be sorted in the time order or name order.

All digital slides are presented to preview in a convenient way.

Slide can be automatically or manually uploaded to the system.

The name can be edited for the convenience of being sorted. Bar codes can be connected to facilitate LIS and HIS connectivity.

Use the link or QR code to share the digital slide to others.
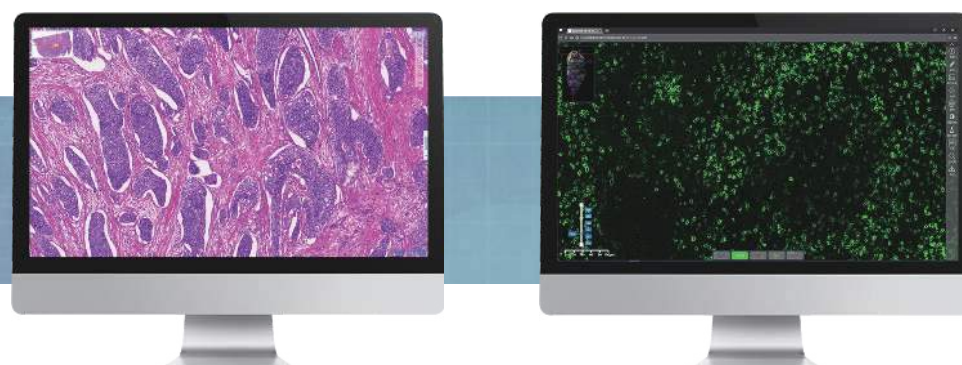
**• Application Scenarios •**

The indispensable software for digital pathology slide scanners

Large-throughput digital slides management in labs or hospitals

Whole digitization of pathology labs or departments

# Telepathology
## Pathology Remote Consultation Platform

Innovated and perfected multiple times by KFBIO, the KFBIO Pathology Remote Consultation Platform has succeeded in greatly simplifying pathologists' workflow and facilitating pathologists in diagnosing remotely and viewing slides without the limitation of time and place. It covers the function of diagnosis management, frozen section management, case collection, data statistics and real-time connection from different sites.

Diagnose and view slides anytime, anywhere. Get right answers efficiently with this telepathology platform to share and discuss the digital slides.

**Real Time**
Rapid frozen consultation, real-time audio and video for diagnosis, seamless reports delivery

**High Stability**
Stable communication and data transmission, quality control, data management

**Share**
Remote education, discussion and consultation, pathology training and assessment support

**High Security**
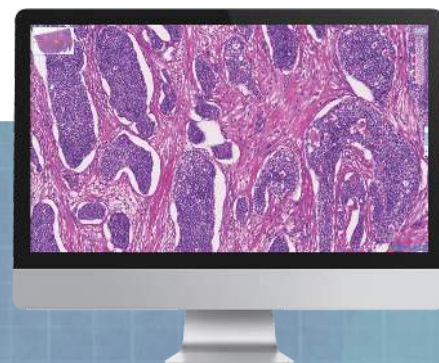Data transmission encryption, safe user login, sensitive data protection

**Convenient**
One-click view slides with link or QR code, online zoom and annotate slides, HIS integration

**Service**
Fast customization, free upgrade, in-time technical support and after-sales service

## Pathology Remote Diagnosis Workflow

**01** Hospitals apply for remote diagnosis

**02** The slide is uploaded to cloud

**03** Pathologists from different sites offer remote consultation

**04** The diagnosis report will be delivered

## Security Guarantee

**Unique report**
Digital signature system guarantees the transmission data integrity and validates the uniqueness of the sender

**Safe interface interaction**
Data transmission encryption, identity authentication, network isolation

**User safe login**
Sensitive data protection and login data security guarantee

**Log audit**
Record operation process, system upgrade, etc. Standardize the archive and warning process to realize log audit

**Data transmission encryption**
Network independent from HIS, user data encryption, guarantee security

**Report printing monitor**
Record the printing times, printing application and reports delivery

### ● Application Scenarios ●

**Routine and difficult cases consultation**
Pathologists discuss and diagnose routine difficult cases remotely via online platform to help analyze the medical history, the current situation and the future treatment plan for patients.

**Cytology, TCT IHC consultation**
Pathologists analyze and diagnose the cytology, TCT and IHC slides together remotely. It improves the sample quality and cell detection sensitivity.

**Intraoperative rapid frozen section consultation**
Pathologists diagnose the frozen sections sampled from the surgery in a short time to provide reference diagnosis opinions to the surgeon for the next step of surgery.

**MDT multidisciplinary consultation**
The group seminar composed of experts from multiple departments is held regularly to discuss the best treatment plan for different diseases and different patients.