PROJECT

EDUCATIONAL APPLICATION FOR MEDICAL PROFESSIONALS

CLIENT

PFIZER PHARMACEUTICALS / TYGACIL

ROLE

PRODUCT DESIGN LEAD

PROJECT:

SUMMARY:

To suppliment their branded material in the field, Pfizer wanted to create an **UNBRANDED, EDUCATIONAL tablet application** on **"the challenges of antibiotic resistance",** for sales reps to use on their calls to doctors—both to **build TRUST,** & to **help SEGUE** into a Tygacil detail.

DESIGN BREIF POINTS:

- **AUDIENCE: Infectious Disease Doctors** (usually practicing in hospitals)

- **OBJECTIVE:** Create an unbranded, educational detail aid application to ***engage*** doctors on ***infectious disease topics*** & ***treatment challenges***, to supplement branded sales material in the field.
  - Help build Pfizer's ***CREDIBILITY*** **as a trusted provider of high quality** medical information that can help improve outcomes in treatment of infectious diseases
  - Lay the **groundwork for a TYGACIL DETAIL**, as the two relate & support each other

- **PERSONALITY/TONE:** "First-rate, timely, ***practical***, ***scientific*** & ***educational***"

- **CONTENT REQUIREMENTS & MAPPING:** (given as **13** separate pages)**:**
  - Information on the (**8**) **most common antibiotic classes** (incl. the bacterial resistance methods they're susceptible to)
  - Information on the (**5**) **most common bacterial resistance methods** (incl. the antibiotics that they can resist)

CHALLENGES:

CONTEXT OF USE (Interruptive / Lack of trust):

Users were **busy doctors** — usually working in **hospitals** — who saw the reps **in between VERY sick patients;** their mind was elsewhere, and they ***neither had the time nor the interest to be interrupted*** *to be "sold" something* — especially since they tend **not to TRUST** pharmacy reps **or find VALUE** in their existing materials.

- Most doctors prefer to avoid sales reps altogether
- According to one study, **30 seconds** was the average time doctors spent with reps, who reported that the doctors do not appear to find enough **value** in the information to justify staying any longer. (***trust*** / ***credibility*** **issue)**
- According to another study, the Pharma industry is one of the **least trusted industries**, surpassed only by Oil & Tobacco.

THIS MEANT THAT THE VALUE OF THE PRODUCT HAD TO BE COMMUNICATED IN UNDER 30 SECONDS

HOWEVER, THE DRUG *DID* HAVE SUBSTANTIAL EFFICACY:

Because Tygacil was a first-in-class antibiotic, it would (at least initially) be inherently unaffected by resistant bacteria (also, clinical trials showed the drug was quite efficacious).

So the reps ***did*** have something valuable to say, ***if only they could convey such complex information quickly enough*** for doctors to realize it as such & hear what they had to say.

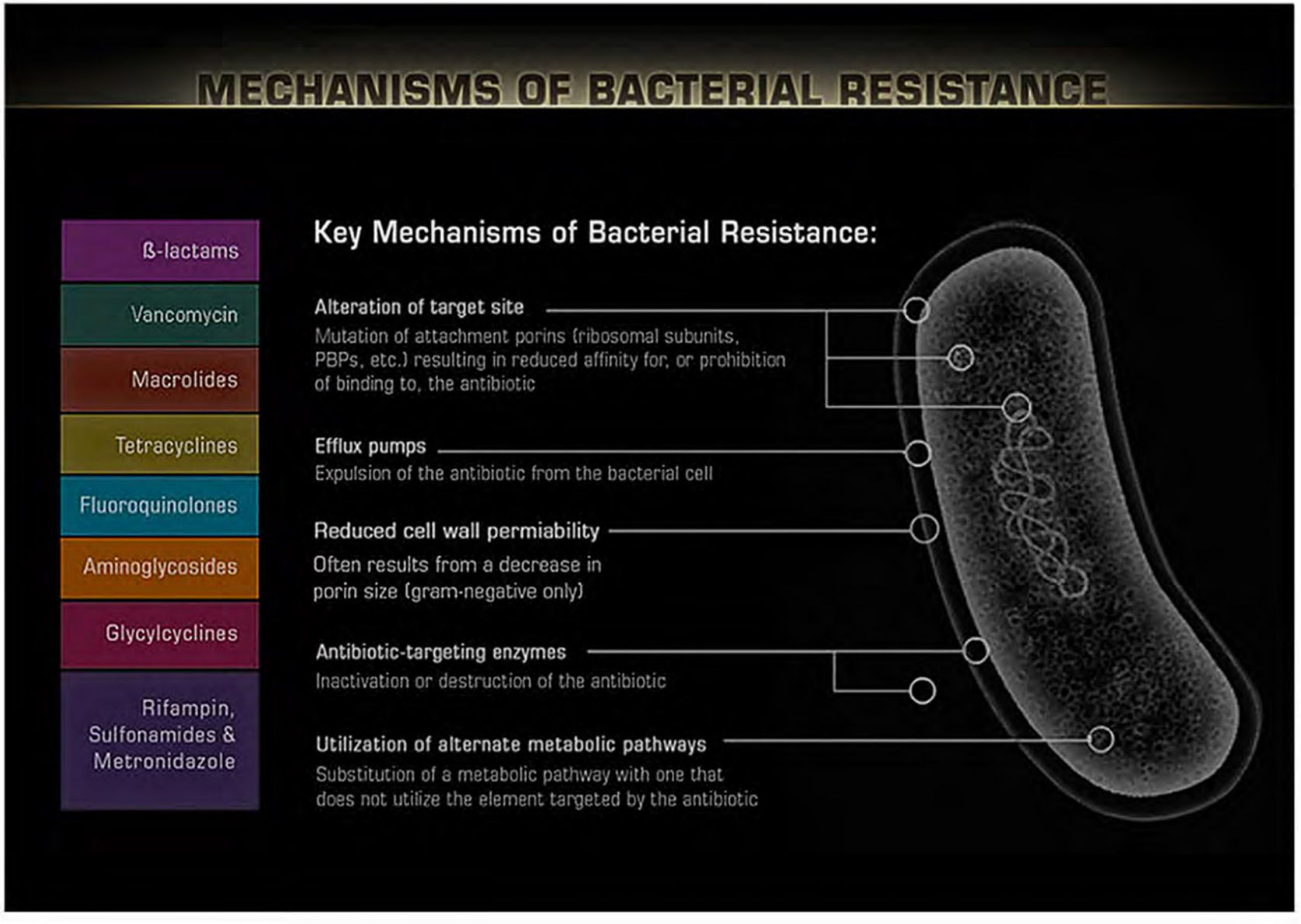
STRICT REGULATORY REQ'S & CONSERVATIVE CLIENTS:

- **CONSERVATISM:** Client's **preferred, text-heavy way of mapping & dividing content** ***("less pages, more page states!")***
- **PFIZER'S "COPY CLEARANCE COMMITTEE":** Team of medical professionals who review all material for strict accuracy
- **FDA REVIEW / COMPLIANCE**

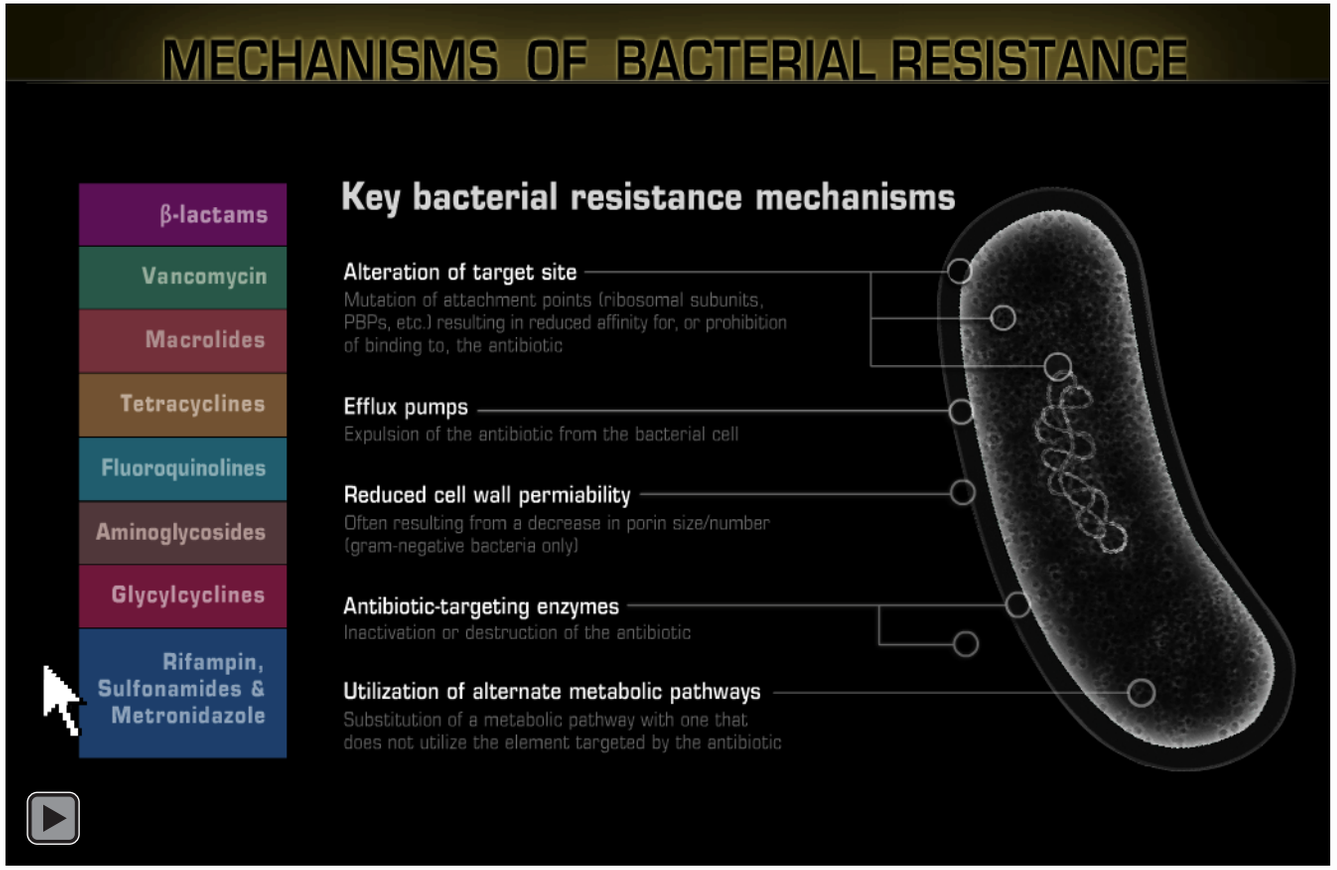
CHANGING TEAM ROLES & REQUIREMENTS:

- **CHANGING TEAM: NO COPYWRITER** (at first) **or SCIENTIFIC ADVISOR:** but worked out b/c of interest & holistic approach
- **CHANGING CLIENT REQUIREMENTS:** Initial requirements had the "MOR" interactive as part of a larger piece on rising bacterial resistance, but client saw much potential in "MOR" & wanted to offer it as a standalone product, ***but plans were obscure***

FINAL PRODUCT: MAIN / INTRO SCREEN



ANIMATED DEMO: INFORMATION IS MEANINGFULY INTRODUCED



RESEARCH: USERS & TECHNOLOGY

USER RESEARCH

Targeted users were **Infectious disease doctors.**

But as the ***context*** of use usually involved sales reps, I also researched **Pharma sales reps & their interactions with doctors**

INTERVIEWS:

Pfizer didn't allow for doctors or sales reps (conservitive industry)

IMMERSION in the industy space: *("acting as if")*

I sought industry trade publications & websites for both doctors & pharma sales reps. The most relevant information came from:

1. **Websites for pharma sales reps with an active user base**, particularly "Cafe Pharma" forums

2. **Trade publications & news sites,** e.g., "Medical Media & Marketing""

MM&M
MEDICAL MARKETING & MEDIA

SECONDARY RESEARCH (published reports):

Mostly focused on doctors' attitudes re: interacting w/sales reps

- They're often **not interested** in meeting with sales reps at all
- They don't **trust** or **value** the information they get from reps, as it is biased; In fact, they see the pharma industry one of the least trustworthy, surpassed only by big oil & tobacco
- When they do meet w/ reps, they do so for **30 seconds** (avg).

INTERVIEWING CO-WORKERS

Account Executives often spoke to their Pfizer contacts about the ***issues facing sales reps in the field*** & their ***daily life & challenges***

EMPATHY

Who likes being accosted by unsolicited sales calls?
In this context (***hospitals, in between seeing very sick patients***), Doctors would be uninterested & preoccupied. In most cases, ***I imagined they'd only stop to speak to a rep if:***

- They were bored (unlikely), or
- If they thought the rep could offer them **valuable, relevant information to help them with the treatment decisions that they were faced with, esp. those at THAT MOMENT.**

TECH RESEARCH

I was responsible for:

- **CODING** (or supervising other coders)
- **QA TESTING** (or supervising)

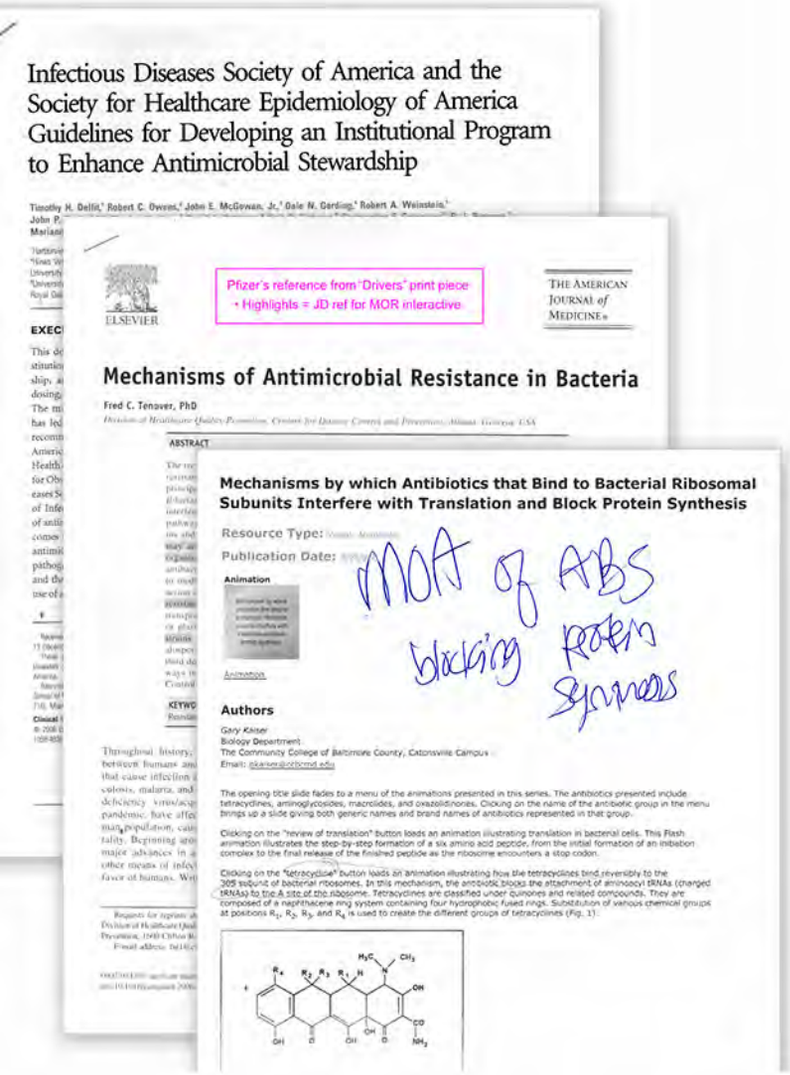
The project was to be run within a CRM platform (Exploria SPS). I interviewed my tech contact there at the start of the project to discover specs & limitations — **and continued to work closely with him** throughout the project (Pfizer would later ask me to **document my coding practices to distribute to other vendors**!).

- **HARDWARE**: Tablet performance/speed was high & consistant
- **SOFTWARE**: The app worked w/ Exploria's API via XML & either Javascript or Actionscript. **I chose A.S. as it cut time by 1/3rd**

RESEARCH: SUBJECT MATTER

SUBJECT MATTER: Understanding the material is critical in order to simplify it

PRIOR PFIZER REFERENCE SOURCES: PEER–REVIEWED JOURNAL ARTICLES



Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship

Timothy H. Dellit,[1] Robert C. Owens,[2] John E. McGowan, Jr.,[3] Dale N. Gerding,[4] Robert A. Weinstein,[5]

Pfizer's reference from "Drivers" print piece
• Highlights = JD ref for MOR interactive

ELSEVIER

THE AMERICAN JOURNAL of MEDICINE®

Mechanisms of Antimicrobial Resistance in Bacteria

Fred C. Tenover, PhD

ABSTRACT

Mechanisms by which Antibiotics that Bind to Bacterial Ribosomal Subunits Interfere with Translation and Block Protein Synthesis

Resource Type:

Publication Date:

MOA of ABS blocking Protein Synthesis

Animation

Authors

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The opening title slide fades to a menu of the animations presented in this series. The antibiotics presented include tetracyclines, aminoglycosides, macrolides, and oxazolidinones. Clicking on the name of the antibiotic group in the menu brings up a slide giving both generic names and brand names of antibiotics represented in that group.

Clicking on the "review of translation" button loads an animation illustrating translation in bacterial cells. This Flash animation illustrates the step-by-step formation of a six amino acid peptide, from the initial formation of an initiation complex to the final release of the finished peptide as the ribosome encounters a stop codon.

Clicking on the "tetracycline" button loads an animation illustrating how the tetracyclines bind reversibly to the 30S subunit of bacterial ribosomes. In this mechanism, the antibiotic blocks the attachment of aminoacyl tRNAs (charged tRNAs) to the A site of the ribosome. Tetracyclines are classified under quinones and related compounds. They are composed of a naphthacene ring system containing four hydrophobic fused rings. Substitution of various chemical groups at positions R_1, R_2, R_3, and R_4 is used to create the different groups of tetracyclines (Fig. 1).

TABLES

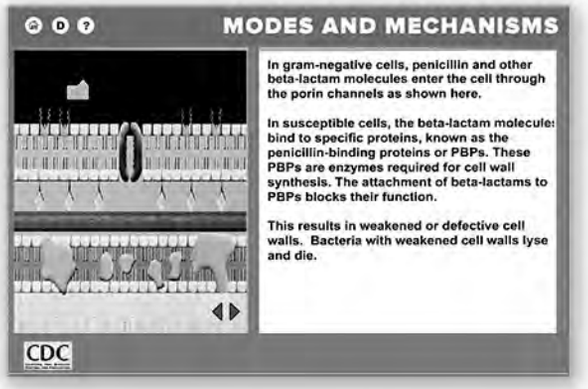
Classes of Antibiotics and their Properties

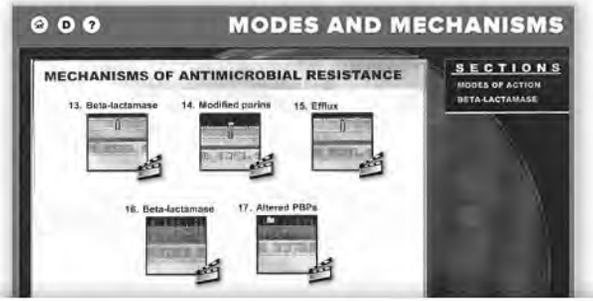
Chemical class	Examples	Biological source	Spectrum (effective against)	Mode of action
Beta-lactams (penicillins and cephalosporins)	Penicillin G, Cephalothin	*Penicillium notatum* and *Cephalosporium* species	Gram-positive bacteria	Inhibits steps in cell wall (peptidoglycan) synthesis and murein assembly
Semisynthetic beta-lactams	Ampicillin, Amoxicillin		Gram-positive and Gram-negative bacteria	Inhibits steps in cell wall (peptidoglycan) synthesis and murein assembly
Clavulanic Acid	Augmentin is clavulanic acid plus Amoxicillin	*Streptomyces clavuligerus*	Gram-positive and Gram-negative bacteria	Inhibitor of bacterial beta-lactamases
Monobactams	Aztreonam	*Chromobacterium violaceum*	Gram-positive and Gram-negative bacteria	Inhibits steps in cell wall (peptidoglycan) synthesis and murein assembly
Carboxypenems	Imipenem	*Streptomyces cattleya*	Gram-positive and Gram-negative bacteria	Inhibits steps in cell wall (peptidoglycan) synthesis and murein assembly
Aminoglycosides	Streptomycin	*Streptomyces griseus*	Gram-positive and Gram-negative bacteria	Inhibits translation (protein synthesis)
	Gentamicin	*Micromonospora* species	Gram-positive and Gram-negative bacteria esp. *Pseudomonas*	Inhibits translation (protein synthesis)
Glycopeptides	Vancomycin	*Amycolatopsis orientalis* (formerly designated *Nocardia orientalis*)	Gram-positive bacteria, esp. *Staphylococcus aureus*	Inhibits steps in murein (peptidoglycan) biosynthesis and assembly
Lincomycins	Clindamycin	*Streptomyces lincolnensis*	Gram-positive and Gram-negative bacteria esp. anaerobic *Bacteroides*	Inhibits translation (protein synthesis)
Macrolides	Erythromycin, Azithromycin	*Streptomyces erythreus*	Gram-positive bacteria, Gram-negative bacteria not enteric, *Neisseria*, *Legionella*, *Mycoplasma*	Inhibit translation (protein synthesis)
Polypeptides	Polymyxin	*Bacillus polymyxa*	Gram-negative bacteria	Damages cytoplasmic membranes
	Bacitracin	*Bacillus subtilis*	Gram-positive bacteria	Inhibits steps in murein (peptidoglycan) biosynthesis and assembly

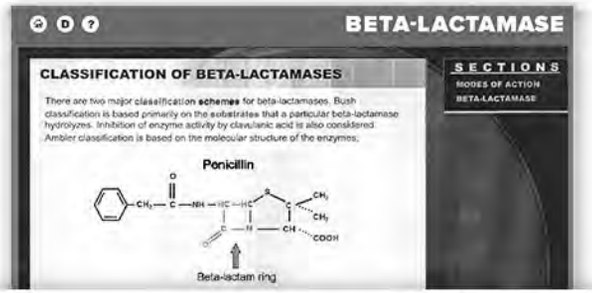
Antibiotic Resistance Mechanisms

Antibiotic(s)	Mechanisms	Genetic Basis	Example Organisms
β-lactams Penicillins Cephalosporins Monobactams Carbapenems	Altered penicillin-binding protein targets	Chromosomal	*Staphylococcus aureus* (1) *Streptococcus pneumoniae* (2) *Staphylococcus epidermidis* (3) *Haemophilus influenzae* (4) *Neisseria gonorrhoeae* (5) *Neisseria meningitidis* (6)
	Reduced permeability	Chromosomal	*Escherichia coli* (7) *Pseudomonas aeruginosa* (8) *P aeruginosa* (8) *Enterobacter cloacae* (9) *Serratia marcescens* (10) *Klebsiella pneumoniae* (11) *Klebsiella oxytoca* (12)
	β-lactamase inactivation	Chromosomal and plasmid	*S aureus* (1) *S epidermidis* (3) Enterococci (13) *P aeruginosa* (8) *Enterobacteriaceae* (14) *N gonorrhoeae* (5) *N meningitidis* (6)
Fluoroquinolones Ciprofloxacin Ofloxacin Norfloxacin Lomefloxacin	Altered DNA gyrase target	Chromosomal	*S aureus* (1) *S epidermidis* (3) *Enterobacteriaceae* (14)
	Efflux or reduced permeability	Chromosomal	*Enterobacteriaceae* (14) *P aeruginosa* (8)
Aminoglycosides Amikacin Gentamicin Tobramycin	Modifying enzyme inactivation	Plasmid	Staphylococci Enterococci (13) Streptococci (15) *Enterobacteriaceae* (14)
	Reduced permeability	Chromosomal	*Enterobacteriaceae* (14) Pseudomonads (16) *Bacteroides* (17)
	Altered ribosomal target binding	Chromosomal	Streptococci (15)
Macrolides and Lincosamides Erythromycin Clindamycin	Methylation of rRNA target	Chromosomal and plasmid	Streptococci (15) *S pneumoniae* (2) Enterococci (13) Staphylococci (18)
	Efflux	Plasmid	Staphylococci, streptococci (15, 18)

ONLINE LEARNING MATERIALS: CDC CONTINUING ED PREP COURSE



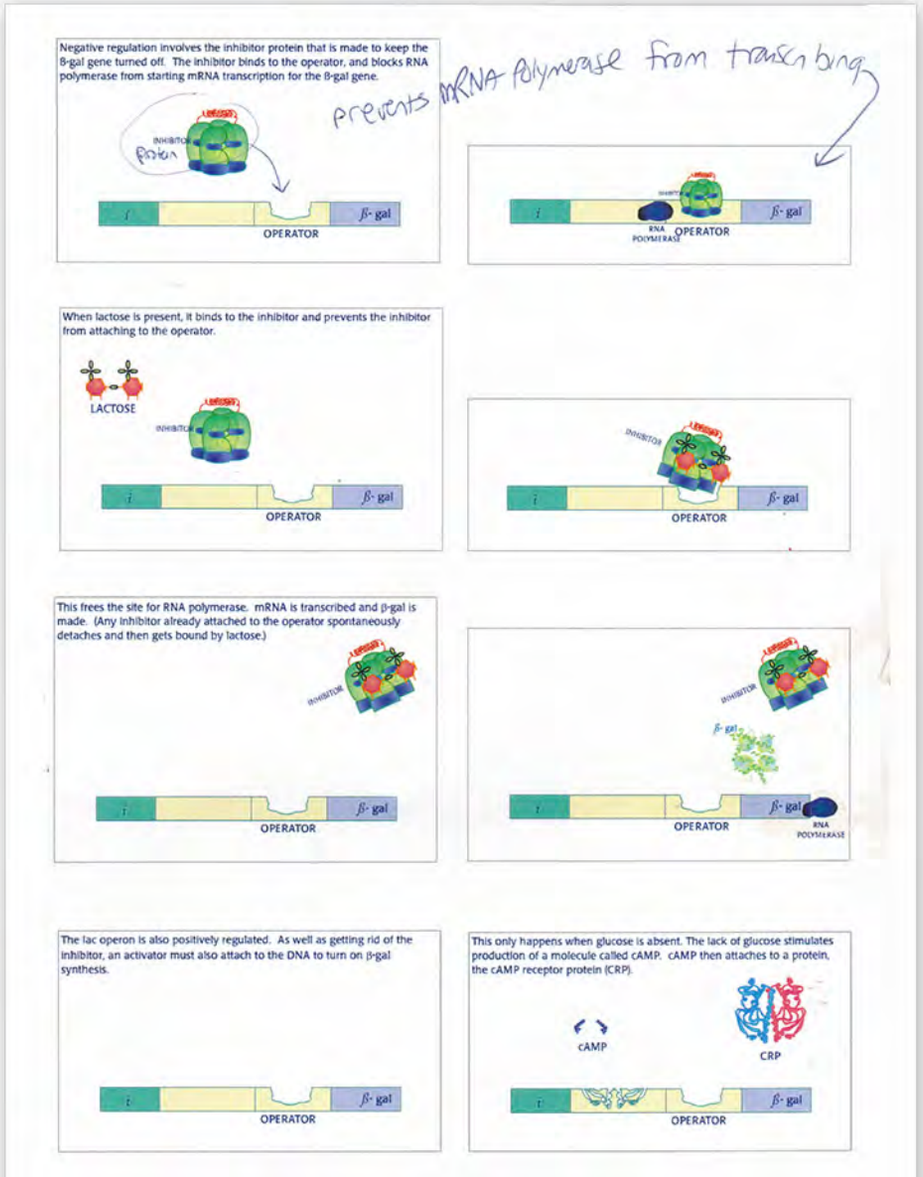


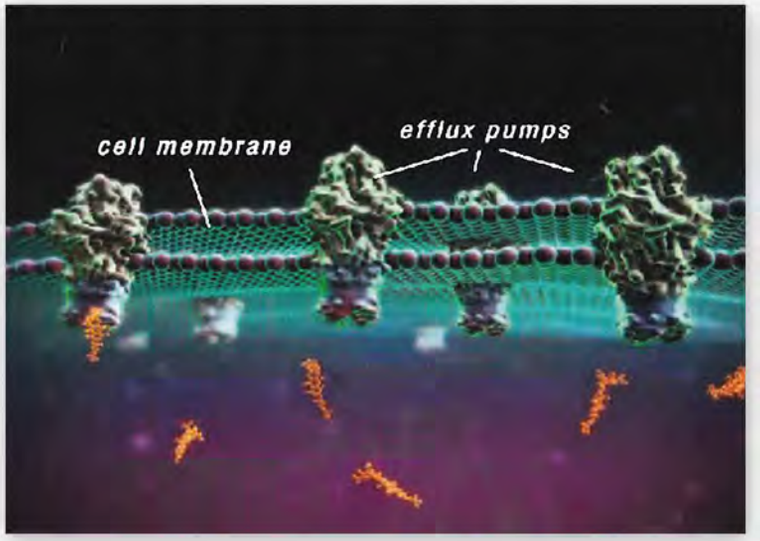


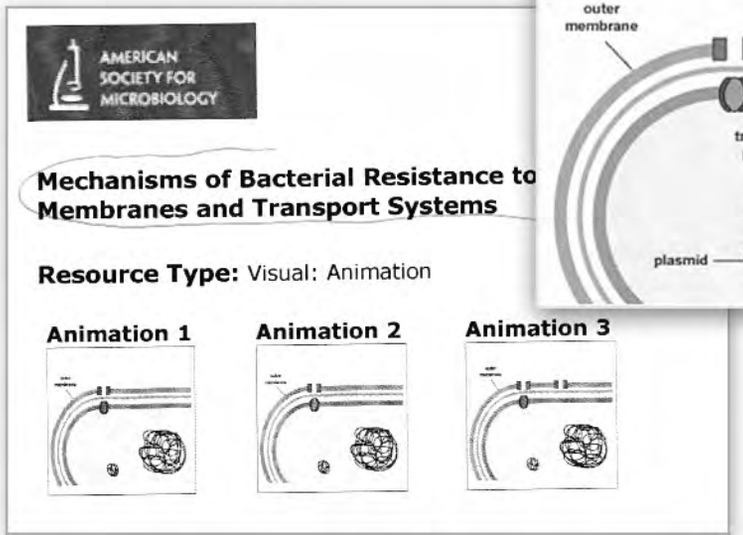
RESEARCH: SUBJECT MATTER DEPICTION

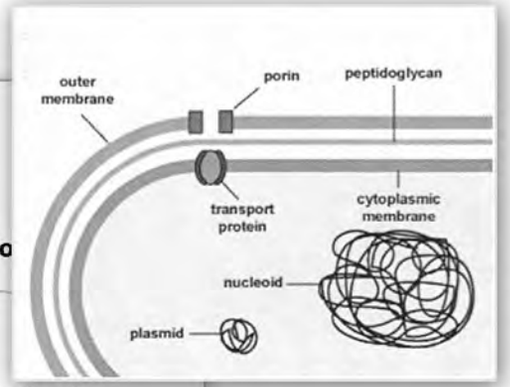
ENSURE ACCURACY OF ANIMATIONS + ILLUSTRATIONS;

Learn what will be appropriate & “familiar” to users









STRATEGY

UPDATE DOCTOR PERSONA The doctors do not find reps trustworthy and often do not want to speak to them

BUILD TRUST by providing unbiased, scientifically accurate information—not marketing materials.

CREATE VALUE / USEFUL TOOL: The product needs to convey it's usefulness to doctors in **under 30 seconds!**

- Build in the flexibility for each user to consume the information that is **most relevant to him or her at that time**
  — **"What antibiotic should I use** to treat the patient I'm going to see now, who hasn't responded to any other antibiotic yet?"
- Take a more **HOLISTIC** approach— **fewer pages** & **more page states** —so users can more eaily **compare & contrast information**
- **Make it EASY** to consume by **decreasing COGNITIVE LOAD —No more walls of text**!

Ensure that the product immediately APPEARS useful... to get doctors to stop & use it in the first place!

- Incl. applying a different look & feel from the existing branded (a.k.a., biased & untrustworthy) Tygacil material

GENERAL GUIDING PRINCIPLES:

ALWAYS AIM TO PROVIDE USEFULNESS (highest-level goal):

- **Usefulness is the most valuable thing we can provide users:**
- **Unuseful** information in our environment is often just treated as ***"noise"*** to tune out

MAKE INFORMATION AS EFFORTLESS TO CONSUME AS POSSIBLE (and ***then*** some):

- **ATTENTION *is a limited resource*** in humans; **INFORMATION *consumes our attention***.
- An **OVERABUNDANCE** of information both ***competes for*** and ***fragments*** our attention, as our brains use more resources ***working*** to filter out what is significant to us, from what is insignificant..

TO SOLVE A PROBLEM, YOU MUST FIRST *UNDERSTAND* THE PROBLEM (essential):

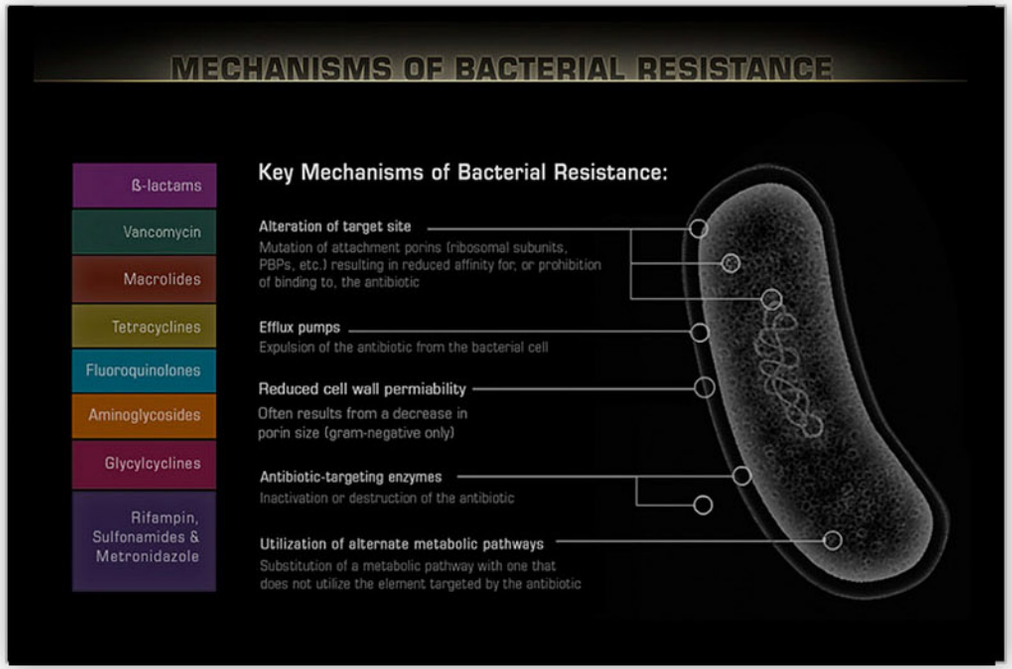
- **RESEARCH is indespensible;** we must do whatever is necessary to *learn & understand*:
  — Target users — Context of use — Industry space — Business problem

VISUALLY DIFFERENTIATING THE UNBRANDED FROM THE BRANDED

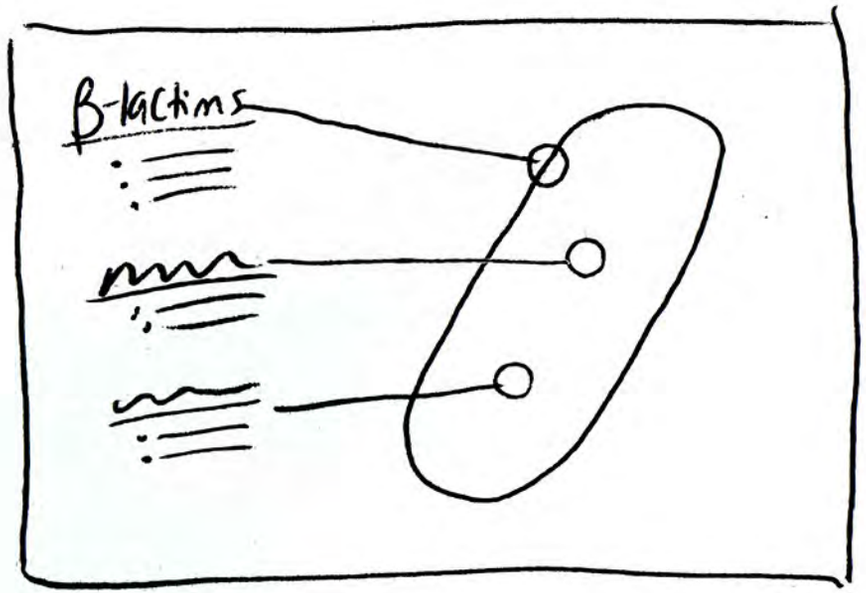
I MINIMIZED ASSOCIATION to promotional (branded) materials: they serve different information to users & should visually communicate that: ***Branded*** materials are based on ad campaigns (making them untrustworthy), while ***Unbranded*** materials are **educational,** not **promotional,** & **looked more like the learning materials** they were based on. **Visual treatments** also reflected their corresponding real-world subject matter

EXISTING BRANDED LOOK & FEEL

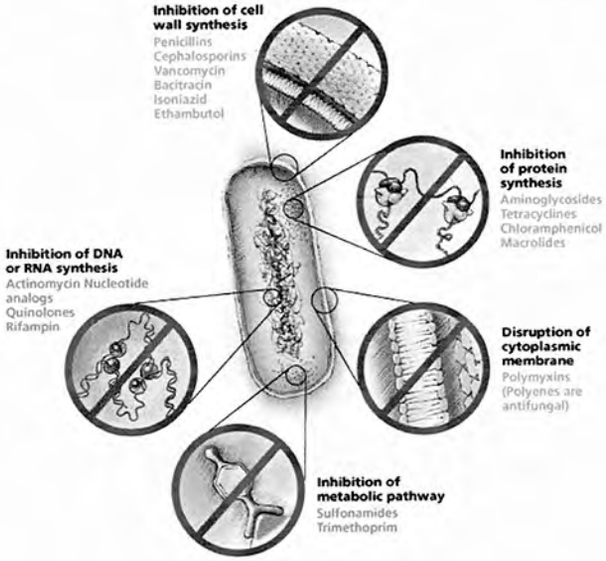
UNBRANDED LOOK & FEEL

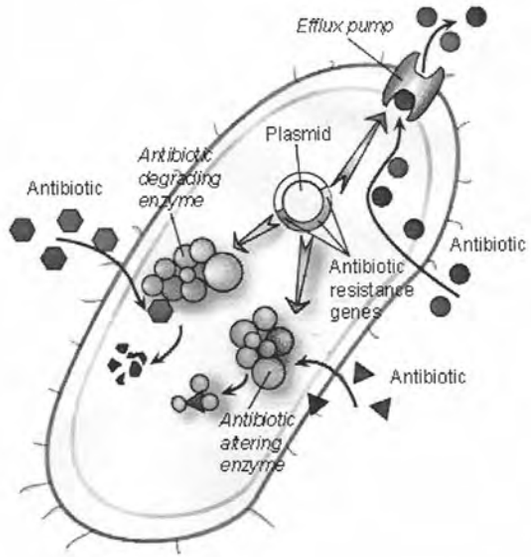


IDEATION : INSPIRATION & SKETCH FOR ORIGINAL WIREFRAME



Click & Zoom for MOR





BASIS FOR INFORMATION ARCHITECTURE / APP STRUCTURE:

CONTENT IS KING!

INFORMATION ARCHITECTURE arose through thoughtful organization & **chunking** content into 2 **natural** categories: **Antibiotics** and **Bacterial Resistance Mechanisms.**

- **Chunking & Placement:** Bacteria & their resistance methods are **conceptually related**, so are designed to be **spatially** & **visually related**, so users can **offload** the task of having to recall where different info. is located.

MAKE INFORMATION USEFUL & EASY TO CONSUME:

APP STRUCTURE IS MAINTAINED through all screen states, making it easier for users to ***stay oriented*** as information on screen changes & **more easily spot relationships** between the data.

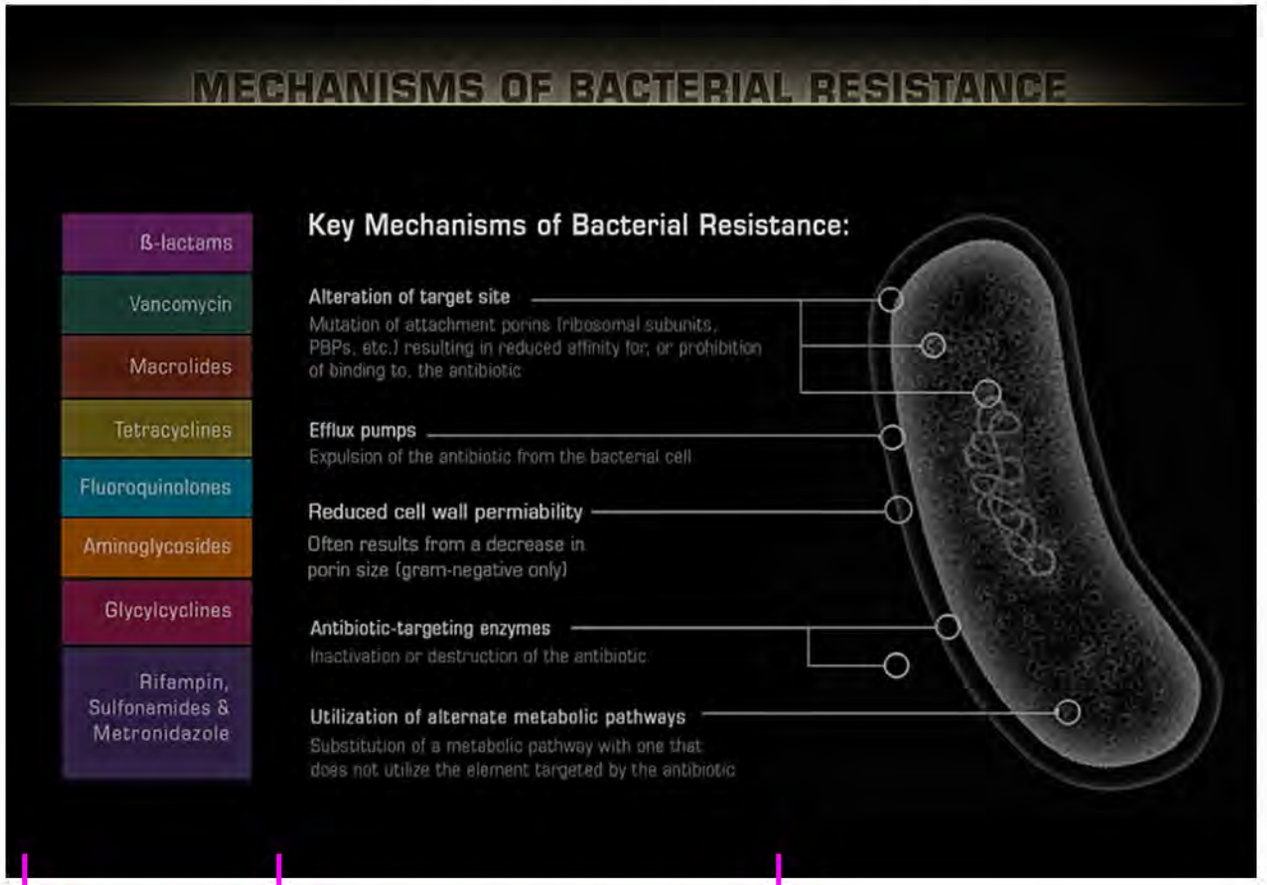
- **Less Screens, More Screen *States*** (holistic /compare)
- **The Consistant Structure** *anchors* users as they explore relationships between screens in a way that is most ***relevant*** *to them in their current* ***context.*** **(e.g., which antibiotic to use with next patient).**

THE DESIGN MUST QUICKLY CONVEY VALUE:

The context is a hospital corridor, as **users (doctors) are rushing between sick patients & don't want to talk** to reps. If they do, reps have 30 sec. (avg.) to give doctors a ***reason*** to stay longer. You must ***EARN*** their attention.

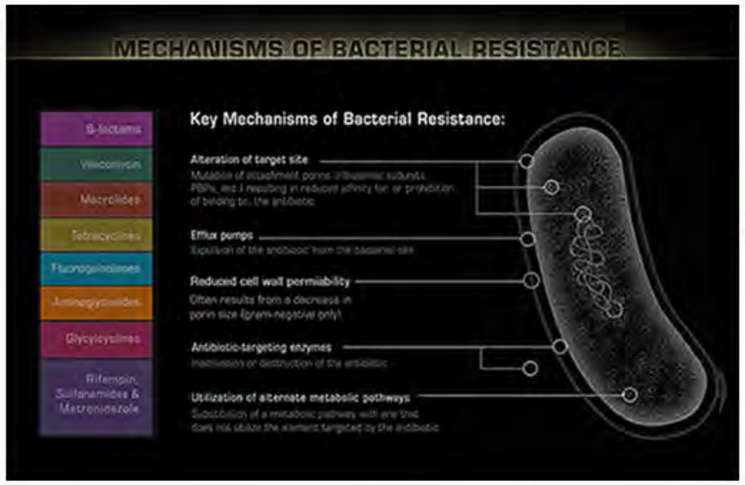
- **Convey value immediately** so docs will ***stop.*** Adapt to their viewpoint; **give them a *tool*** to help.

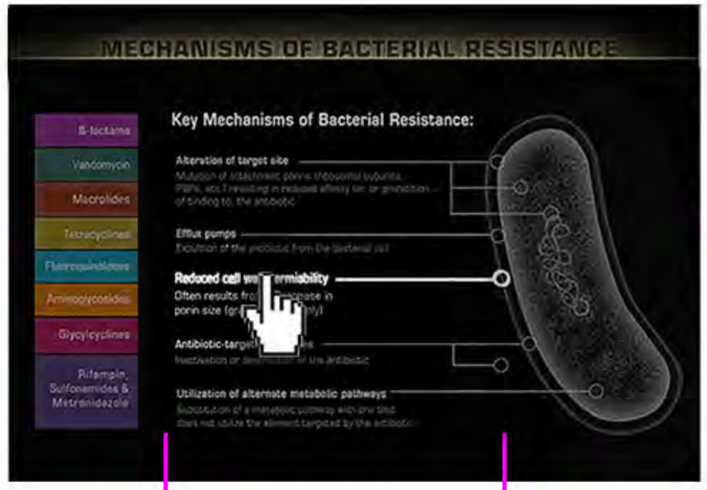
MAIN SCREEN / INITIAL APP STATE



TWO BASIC WAYS TO EXPLORE THE INFORMATION

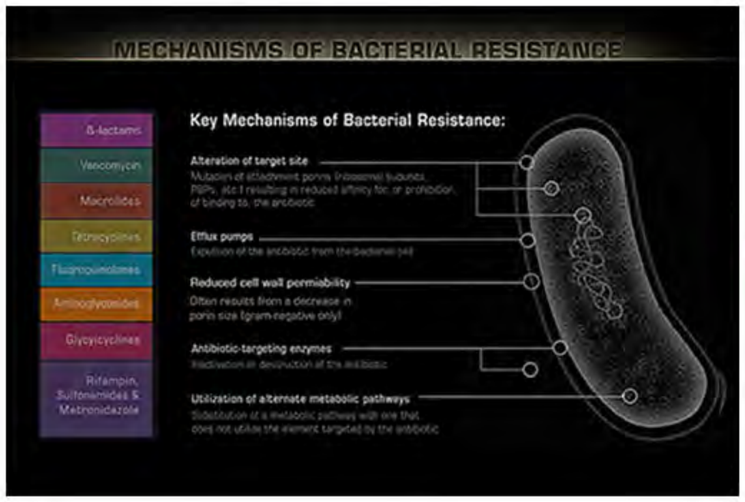
BY BACTERIAL RESISTANCE METHOD

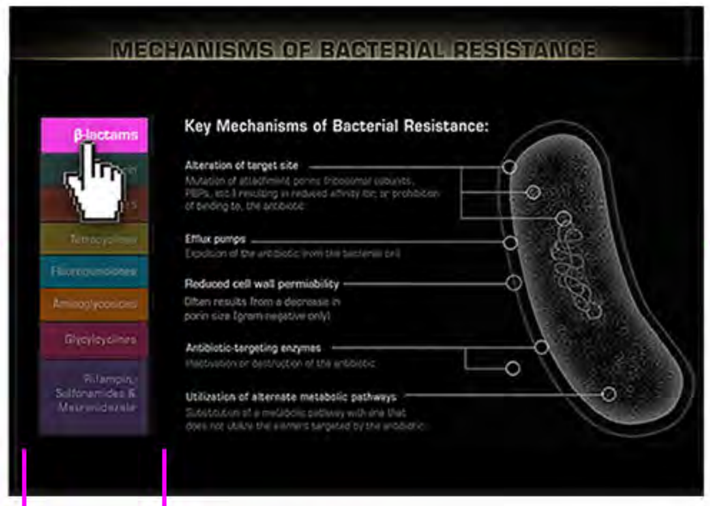




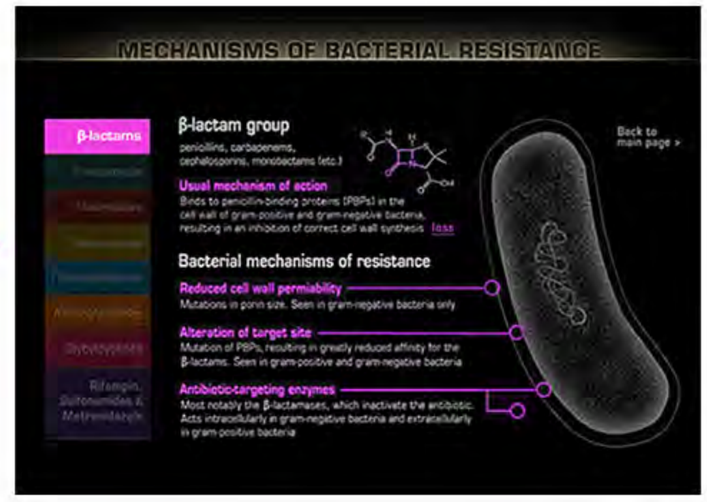
BACTERIAL RESISTANCE METHODS

BY ANTIBIOTIC CLASS

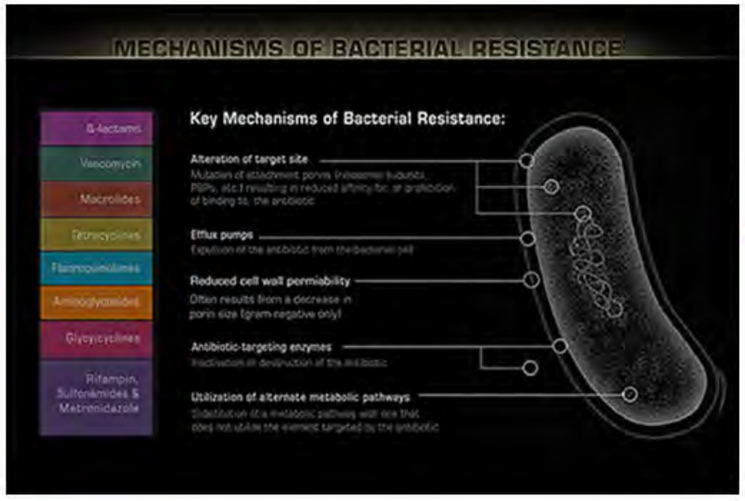


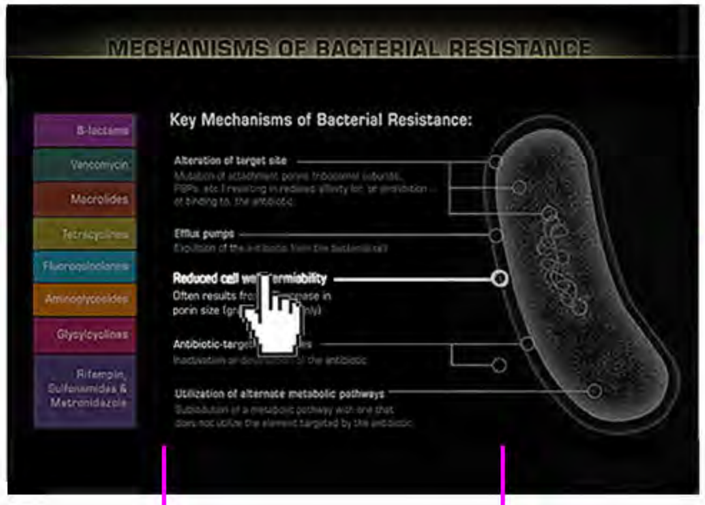


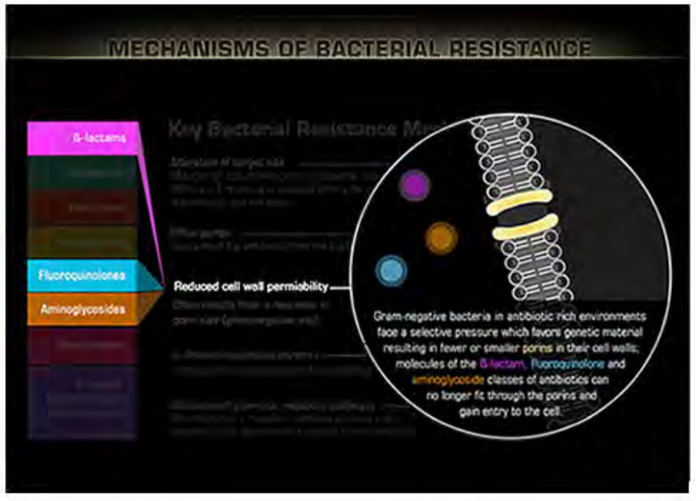
ANTIBIOTIC CLASSES



EXPLORING BY BACTERIAL RESISTANCE METHOD







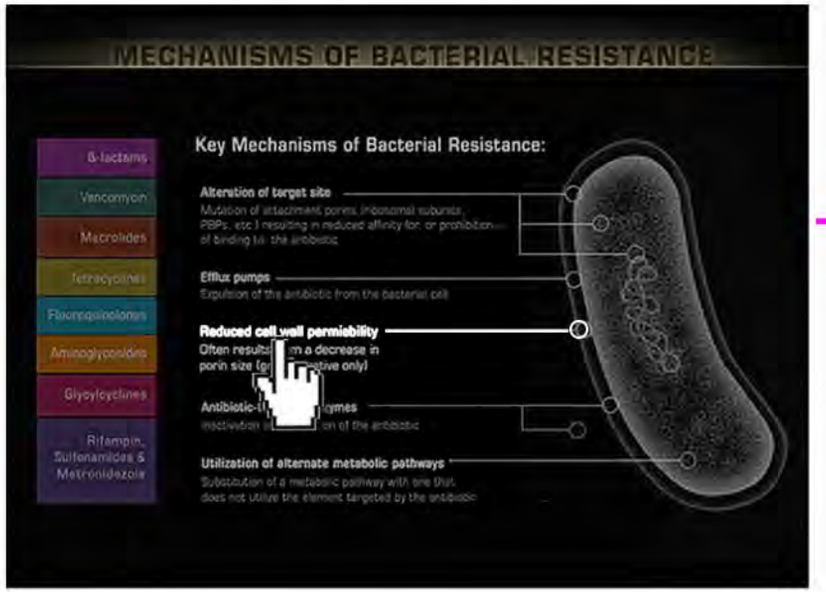
BACTERIAL RESISTANCE METHODS

EXPLORING BY RESISTANCE MECHANISM

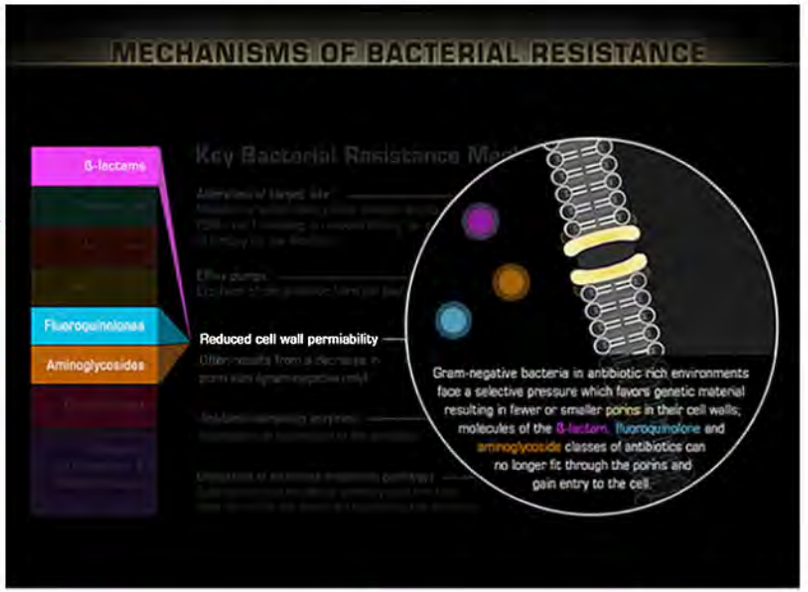
Clicking a BACTERIAL RESISTANCE MECHANISM reveals an explanitory animation about it, along with the **antibiotic classes that are susceptible to it**

...more page STATES instead of separate pages!

MAIN SCREEN



MAIN PAGE: SHOWING RM #3 DETAILS



SUSCEPTIBLE ANTIBIOTICS FOR THE SELECTED RESISTANCE METHOD ARE HIGHLIGHTED

THE USER CAN CLICK ANYWHERE OUTSIDE THE CIRCLE TO CLOSE THE CURRENT SCREEN STATE AND RETURN TO THE INITIAL PAGE LAYOUT

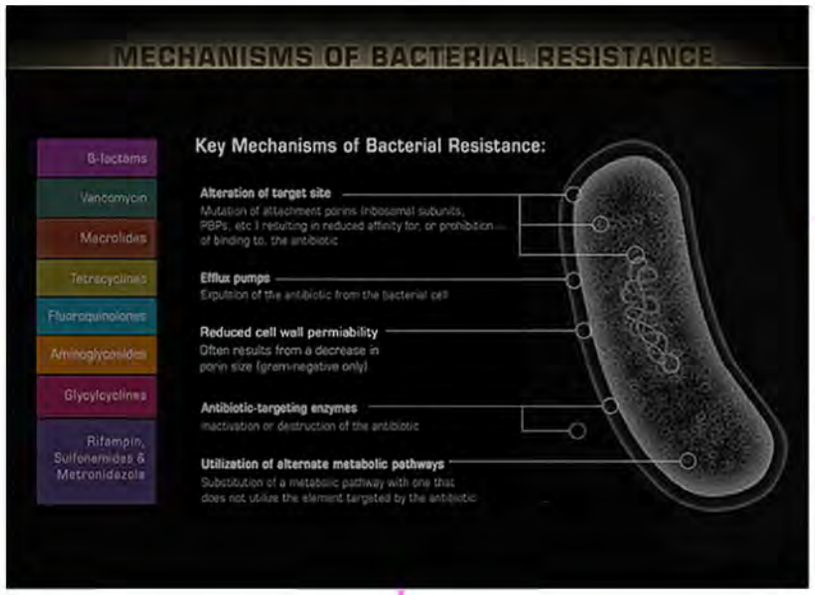
RESISTANCE MECHANISM INFORMATION & ANIMATION

EXPLORING BY RESISTANCE MECHANISM

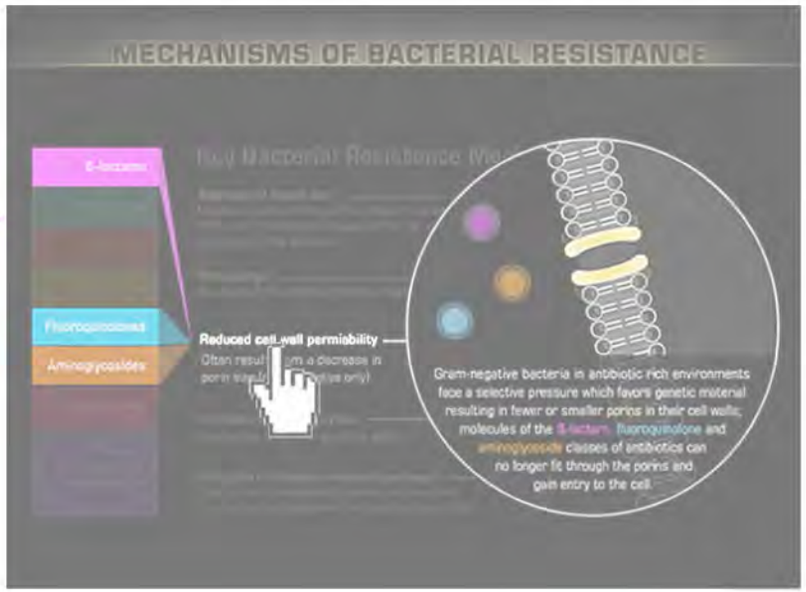
Clicking through the different resistance mechanisms:

This allows doctors to easily spot **relationships between the antibiotics they are prescribing** their patients, and **the resistance patterns** those patients may be displaying.

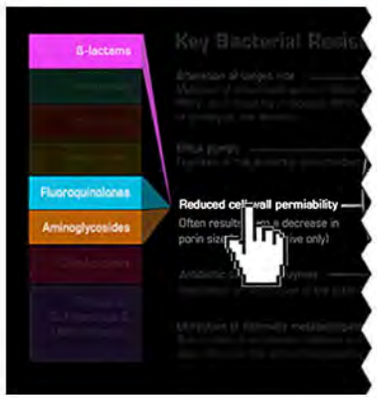
MAIN SCREEN



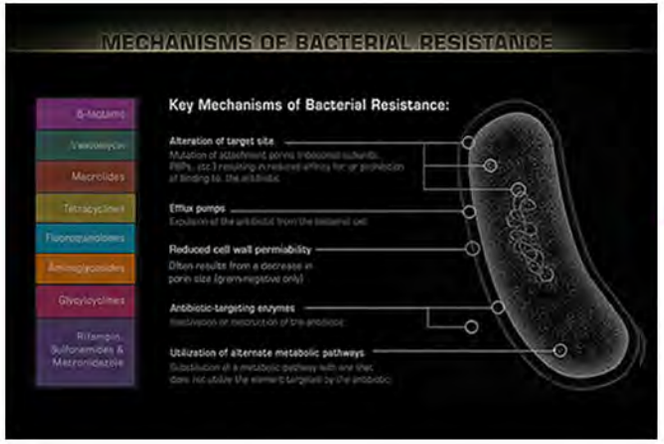
MAIN PAGE: SHOWING RM #3 DETAILS

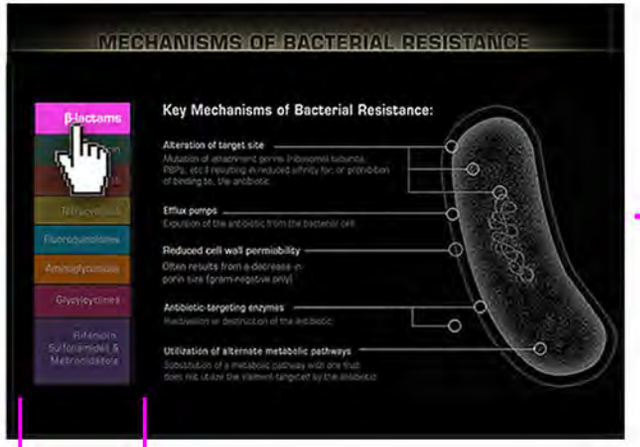


CREATING VALUE: Users can click through successive RM's to easily compare & contrast their susceptible abtibiotics IN ONE SPOT

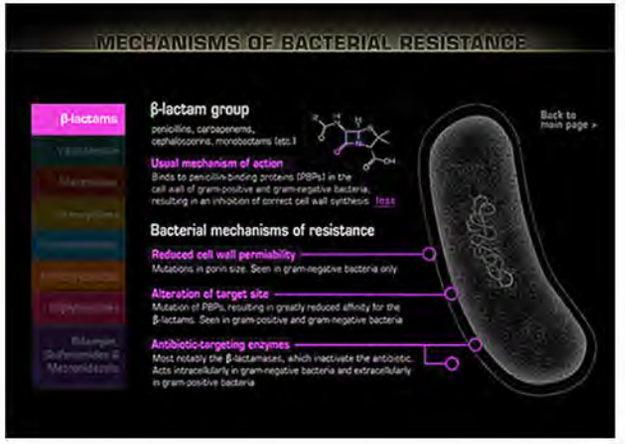


EXPLORING BY ANTIBIOTIC CLASS





ANTIBIOTIC CLASSES



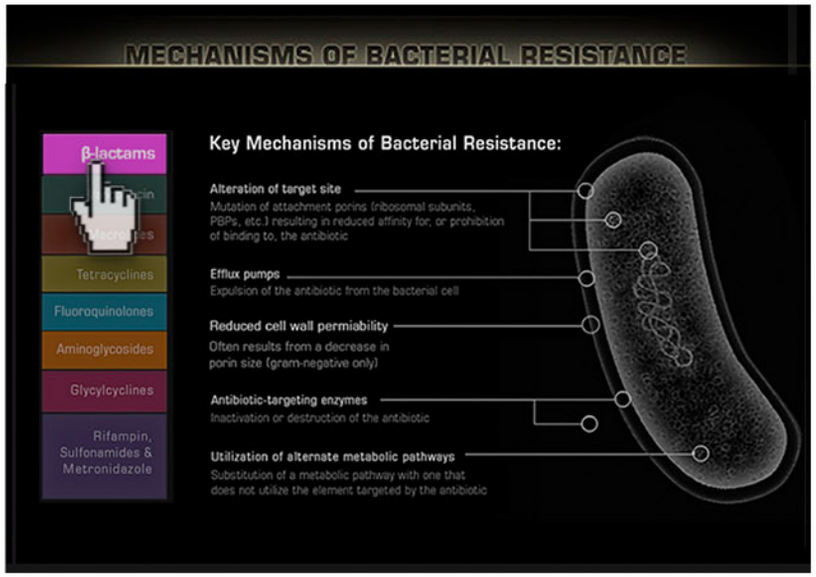
EXPLORING BY ANTIBIOTIC CLASS

CLICKING ON AN ANTIBIOTIC CLASS takes the user to the corresponding

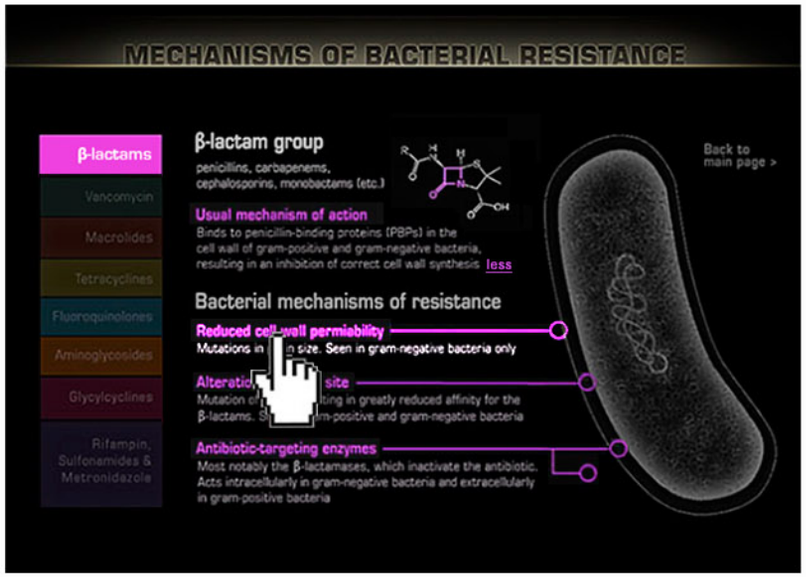
ANTIBIOTIC CLASS PAGE, revealing:

- Information on that **antibiotic class**
- The **types of bacterial resistance** it's susceptible to

APP MAIN PAGE



ANTIBIOTIC CLASS PAGE: *("ß-LACTAM GROUP")*



As with all the app's pages, the **POSITION of analagous information is maintained** to keep users **oriented,** without the need to use extra cognitive effort: they can more **easily and immediately SEE the differences between antibiotic properties as screen states change**, without having to rely on their memory of information from previous pages.

This gives doctors **relevant information for their immediate situation** ("which antibiotic to prescribe their next patient"),
as it helps them quickly identify antibiotics that are most susceptible to the bacterial defense mechanisms that threaten their patients' lives.

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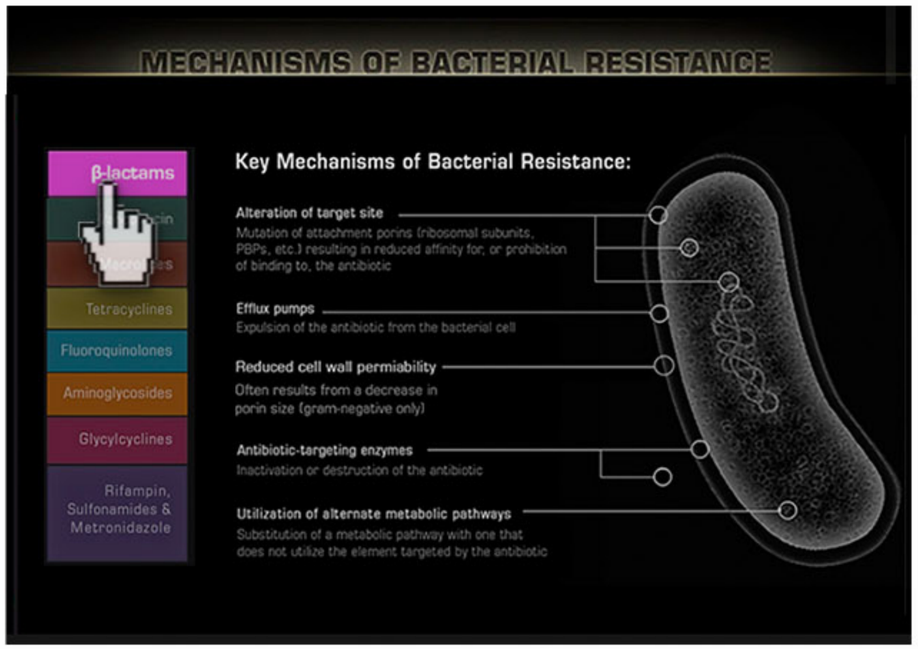
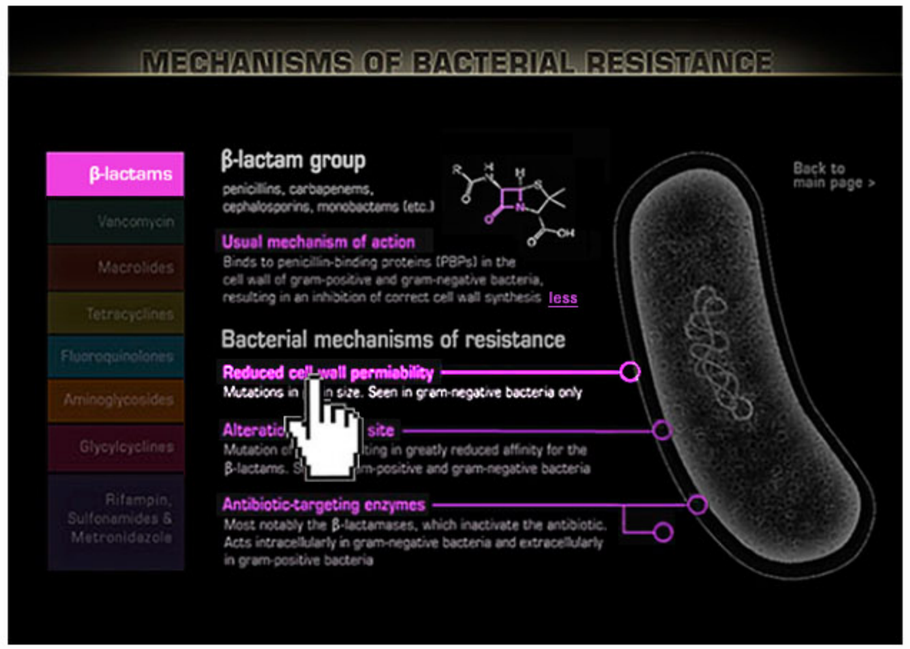
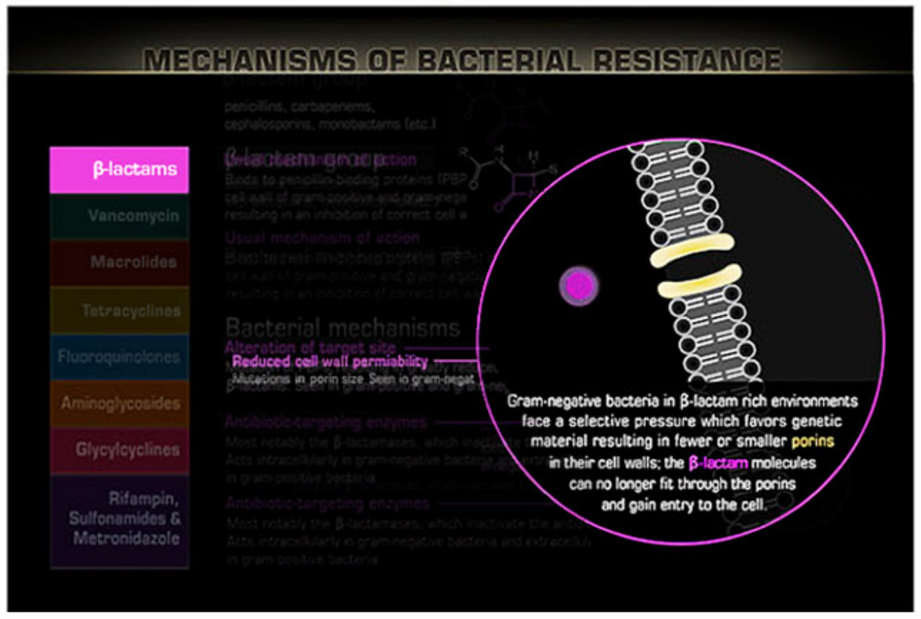


ANTIBIOTIC CLASS PAGE: *("ß-LACTAM GROUP")*



From the antibiotic class page, users can **click on any of its resistance mechanisms to enlarge it & view more information,** just as they can do from the main page

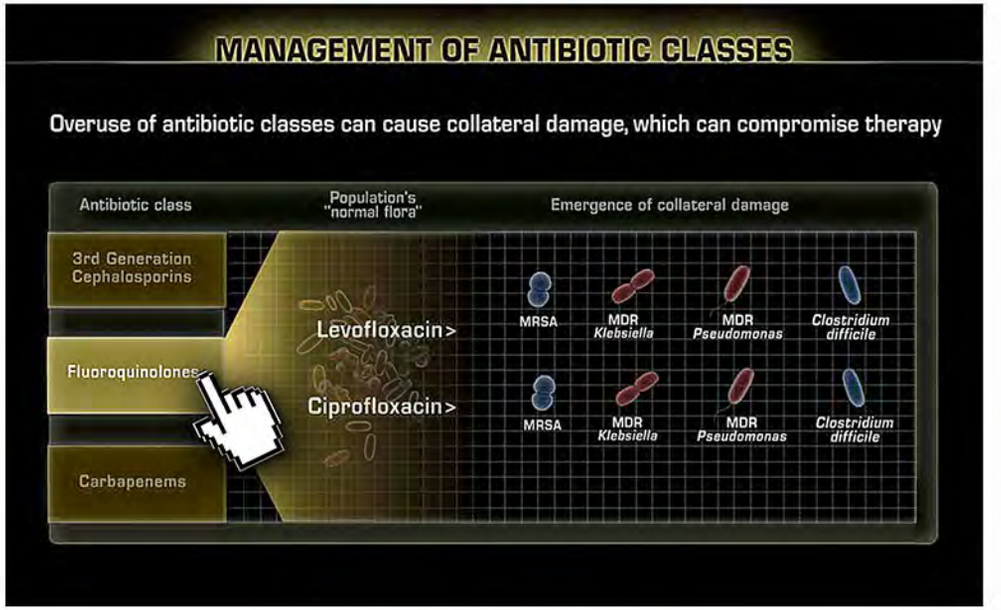
A.B. CLASS PG SHOWING RESISTANCE METHOD DETAIL



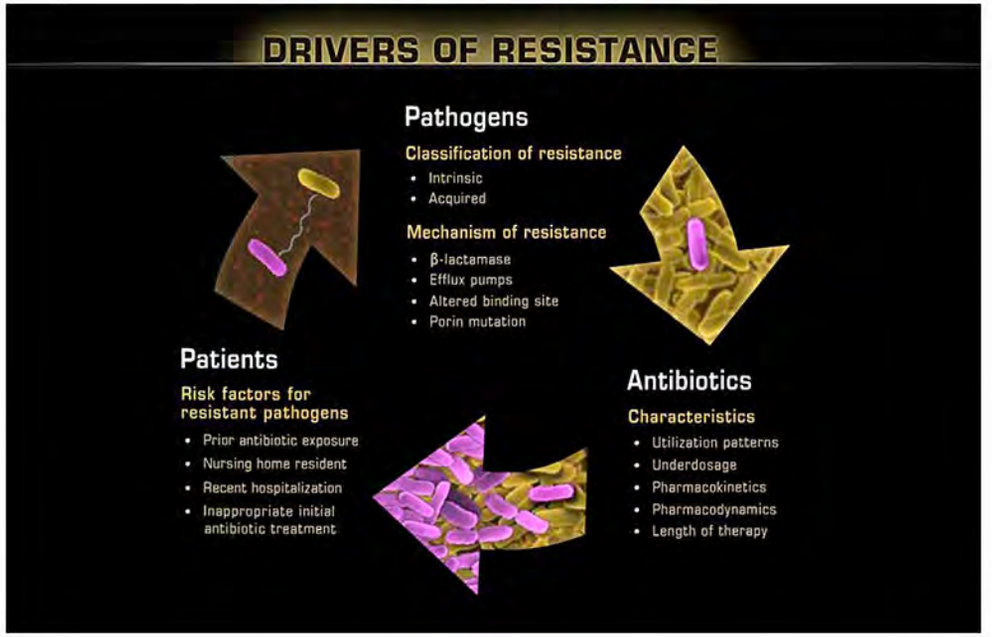
ADDITIONAL SCREENS FROM INITIAL PROJECT SCOPE

INTRO + TABLE OF CONTENTS

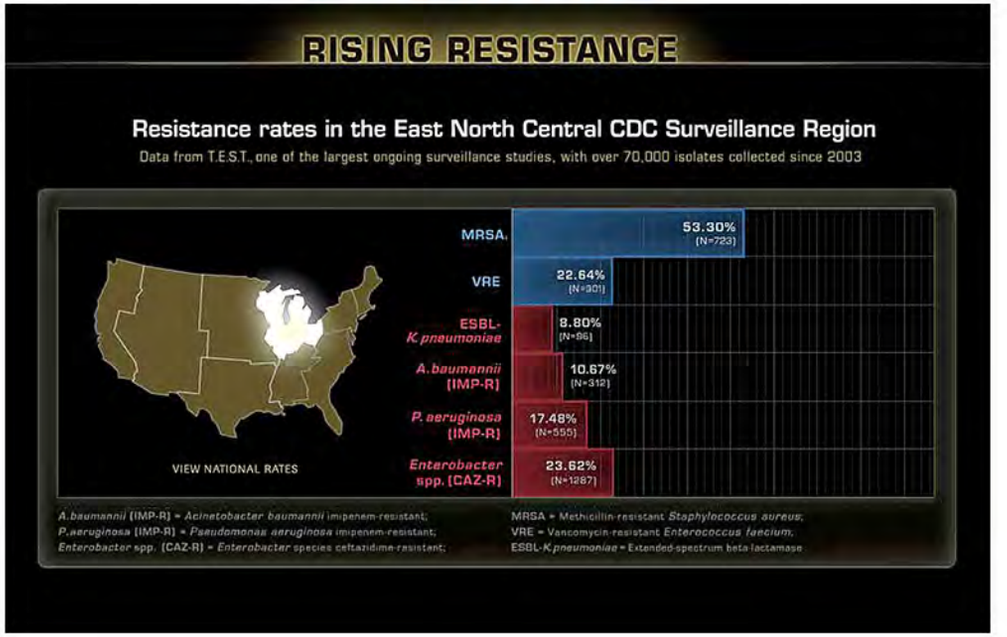
"COLLATERAL DAMAGE"



"DRIVERS OF RESISTANCE"



"RESISTANCE RATES"



ORIGINAL ANIMATED DEMO